

Impact of Mechanical Neck Pain on activities of daily living for computer users

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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

“Impact of mechanical neck pain on activities of daily living for computer users”

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DECLARATION

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

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Acronyms

BHPI	Bangladesh Health Professions Institute
CRP	Centre for the Rehabilitation of the Paralysed
BMRC	Bangladesh Medical Research Council
JU	Jahangirnagar University
NDI	Neck Disability Index
SPSS	Statistical Package for the Social Science
PT	Physiotherapy
ROM	Range of Movement
WHO	World Health Organization
CSE	Computer Science and Engineering

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Abstract

Introduction: In current era of information technology, computers are widely used by students. Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain among university students. **Objective:** The aim of the study was to find the impact of neck pain and disability in computer users (students of Jahangirnagar University). To identify neck discomfort or pain in body and explore the socio demographic characteristic (age, sex, education, resting pain, working pain) of computer users with their problem, to examine and interpret how the study experience and duration of work & no previous history of accident affects the neck pain, identify and clarify the interruption of work & the diagnosis and their treatment options in person affected by neck pain. **Method:** 60 students (computer users) participated in the study voluntarily by filling the Neck disability index questionnaire and Visual analogue scale. Cross sectional study design was used in this study. 60 patients with neck pain were conveniently selected by four groups from Jahangirnagar University. Among them 15 patients were 1st year, 15 students were 2nd year, 15 students were in 3rd year and rest of 15 students were in 4th year. There are 39 students their age group was (19-21) years and 21 students their age range was (22-24) years. There are 31 students are male and 29 students are female. Outcome measurement tools were using during data collection like Visual analogue scale (VAS) was used to measure pain and NDI to measure neck disability. **Result:** In this study found that, among the 60 participants 51.7% were male and 48.3% were female. Their age range was 19-21 years and 22-24 years. In this study taken from 1st year, 2nd year, 3rd year and 4th year students. By using SPSS 20 version the study found that 48.3% students have no disability, 36.7% students have mild disability, 6.7 % have moderate disability, 5% students have severe disability and 3.3% students have complete disability. Also the study found that 4th year students were suffered most in neck pain for computer using. **Conclusion:** Incidence of neck pain is very high in students with prolonged computer usage. But the incidence of the disability caused by it is not very high.

Keywords: Neck pain, Neck disability index (NDI), Computer users, Students

1.1 Background

The development of computer and information technology is perhaps one of the most dominating factors in the ever-changing working life of today. The 1990s saw a rapid computerization of Swedish working life and the number of computer workers is continuously increasing. Studies on adult work life support a hypothesis that computer-related activities can cause Neck Pain in the young. Neck symptoms have been associated with low or high screen position, shoulder symptoms with high screen position and shoulder elevation in computer mouse users, and the risk of Neck Pain with poor placement of keyboard. Major causes of many of these disorders and injuries are technological advances (e.g., faster more powerful computers), increased use in repetitive motions, competitive work environments, inflexible workstations design, and poor education/training on proper workstation design. In 1999, nearly million people took time away from work to treat and recover from work related musculoskeletal pain or impairment of function in the low back or upper extremities. India being the forerunner in the cyber world, there is an urgent need to understand the dynamics of these problems and prevent it from assuming epidemic proportions (Kumar et al., 2013).

Neck pain has become a considerable issue worldwide, and encompasses a wide range of musculoskeletal tissue injuries, some of which are work related. These kind of disorders affect many areas of the body such as the neck and upper extremities. Neck pain may arise from any of the innervated structures in the neck, such as intervertebral discs, muscles, ligaments, zygapophyseal joints, and dura or nerve roots. However in the majority of cases, the patho-physiological mechanisms underlying neck pain are unclear (Monika et al., 2017).

In current era of information technology, computers are widely used by students. Though information, communication and technology are being used to improve health care systems, there are also associated health hazards with the use of these devices. Prolonged use of computers during daily work activities and recreation is often cited as a cause of neck pain (Bhardwaj & Mahajn, 2015).

Students start using computers at an early age. We recently reported that over half of Western Australian student used a computer by 5 years of age. In earlier reports, 99% of Australian children between the ages of 11 and 14 had used a computer. Not only are the majority of students in affluent countries using computers, they experience substantial exposure to computer use by the end of adolescence. In a meta-analysis of studies mainly from Europe and North America, Marshal et al. found the mean daily exposure to computers to be 34 minutes. More recent data suggests this is rising rapidly, with USA children now spending in excess of 60 minutes a day with a computer (Straker et al., 2005).

Neck pain and computer users are clearly connected due to extended periods of sitting in a certain position with no breaks to stretch the neck muscles. Four to five hours of daily computer use is a noted risk factor for neck pain in adolescents. An ideally aligned neck has a slight lordotic curvature. Prolonged Computer use and sitting with rounded shoulders and faulty neck posture disturbs the normal lordotic curve of neck leading to muscular imbalance and consequently neck pain. Keeping the neck in proper alignment is very important in preventing neck pain (Nadeem et al., 2017).

In the recent years, there has been an increase in incidence of neck pain among university students. Potential risk factors for this might be increased use of computers (Bhardwaj & Mahajan, 2015).

Niemi et al. observed that activities involving static loading of the upper extremities, such as computer use, were associated with neck pain in children, and Ramos et al. demonstrated a positive link between neck pain and the amount of computer use at school. Moreover, Hakala et al. argued that the increase in adolescent neck prevalence rates between 1991 and 2001 was due to the increased use of computers. However, Van Gent et al. and Burke and Peper found no association between computer use and neck pain in children, and so further work is required in this area (Straker et al., 2005).

Nowadays, computer are becoming so useful, fast and powerful that they are bring many benefits to students. It was reported by Shears (1995) and McDonald (1995) that computer provide flexibility in the learning process and that students appear to enjoy using them. Computer users frequently assume inconvenient postures while using computer. Some of these postures are lying on the floor, using desks that are not designed for computers. This leads to uncomfortable or unhealthy postures for the computer users that may lead to injury or discomfort (Bodwal et al., 2017).

There is general agreement that the frequency of neck pain in particular profession is quite high and its symptoms greatly affect the quality of life and need for health care. Neck problem also accounts for a large proportion of occupational illness and disability and place a heavy load on the compensation insurance system. The prospective studies on impact of neck pain are important to study the size and extent of this problem that would facilitate accurate prediction of the need for preventive measures. Neck pain is common among computer workers in our country and contributes importantly to the demand for medical services and the economic burden of absence from work due to sickness. Population based studies suggest that life time prevalence of over 70% and a point prevalence of between 12% and 34% (Khan & Faizan 2016).

Computers have become an epitome of modern life, being used in every aspect of life. Work related musculoskeletal pain among employees working on computer and peripheral devices in information technology sections has been a major concern in recent years. It is multidimensional which is associated with, and influenced by, a complex array of individual, physical and work –related factors. It's responsible for negative impact of mental health (Mohanty et al., 2017).

First, it is difficult to precisely determine the onset of neck pain in individuals. It appears that, in today's workplaces, most neck pain develops gradually and follows an episodic course throughout people's lives. The commonest site of pain felt by most of computer workers after a working spell of 3 to 4 hours was the lower cervical, supra-scapular, upper dorsal and at the inter scapular region, which usually abated after taking rest. The identification of factors that predict chronic disability may also shed light on

why some workers develop chronic disability, and thus guide the development of intervention strategies that may prevent this process from occurring. These problems if ignored can prove debilitating and can cause crippling injuries forcing one to change one's profession. The aim was to determine the relationship between maximum working hours, intensity of pain and level of disability in computer professionals (Kumar et al., 2013).

The discovery of the computer has to a greater extent revolutionized most professions and their work performance. Like as accountants, architects, bankers, engineers, flight controllers, graphic artists, journalists and students cannot work without help of the computer. Recent studies have shown that technology is associated with several health related challenges. Therefore, the need of research into computer related health problems cannot over emphasized, more so when one consider the upsurge in information technology and daily increase in the number of computer users from walks of life (Akinbinu & Mashalla, 2014). Work related neck disorders are common problems in office workers, especially among those who are intensive computer users (Szeto et al., 2005).

The worldwide trend is for people to use computers for longer periods daily, due to increased computer-based tasks at work as well as during leisure activities. Introduction of the computer into the workplace has changed in work organization, and a different use of worker physical and mental potential. It is generally agreed that the etiology of work related neck disorders is multidimensional which is associated with, and influenced by, a complex array of individual, physical and psychosocial factors. Among these various risk factors, work-related psychosocial factors appear to play a major role. According to Ariëns et al., work-related psychosocial variables may include aspects of the work content, organization, and interpersonal relationships at work, finances and economics. Individual factors are considered as confounding factors that influence the relation between psychosocial demands and the occurrence of neck pain. Furthermore, psychosocial demands may be highly correlated with physical demands, which also indicate a confounding effect of physical factors on the relation between work-related psychosocial variables and the occurrence of neck pain (Wahlström et al., 2004).

Many studies have been done on computer professionals regarding the prevalence of musculoskeletal disorders affecting the neck. There are studies giving a number of risk factors like prolong sitting in a single posture, duration of computer use without breaks, gender, type of work etc. Most of the previous studies neck pain among computer operators were limited on work station issues ,working duration and demographic variation but very limited studies are done on Physical activity during leisure time (active/sedentary) as important variable for neck problem in computer operators also various studies suggest that work-related psychosocial aspects have been identified as causal factors contributing to the development of neck pain but no specific study was done which can be contributing factors to give rise an impact of activities of daily living for computer operators (Pattnaik et al., 2017).

The purpose of my study was find out the impact of pain among computer users participating in regular healthy physical exercise and those who live with sedentary life style and quantified association between physical exercise and neck pain and other risk factors that contribute to development of neck pain among computer operators. There was also need of the study to determine the impact of stress in daily life due to neck pain among computer operators. By doing this survey we can give them the knowledge about the problem and guide them towards primary and secondary prevention of neck pain (Mohanty et al., 2017).

1.2 Rational

Although some studies have dealt with neck pain among computer users in other countries, the exact nature and impact of this important health problem has not been studied before in Bangladesh. This study was formulated to fill the gap of knowledge in this area. The aims of the study were to assess the pattern of neck among students who use computer and to identify the impact of demographic and activities of daily living on them. We thought, if we can identify the specific factors, then we can give concentration on those specific factors for the better outcome of the people who are suffering from stroke and they will get maximum benefit from physiotherapy treatment. As a result it will improve the functional outcome, reducing limitation of activity.

We are living in the electronic age. World is now very much dependent on computer. Nowadays Bangladesh is in the revolution toward digital Bangladesh which indicates Increase use of information technology in every aspect. Therefore, computer will be a Common work tool in almost every workstation in perspective of Bangladesh. With an Increase in the intensity, frequency and popularity of computer use inside and outside. At home, the incidence of neck pain has been increased. However, there are only few Attempts to inquire this site of health service. From the study computer users will be Able to identify the mechanical neck problem related to their work that can influence their activities. They may provide proper recommendation for every problem which will be helpful for them.

This study will also help to discover the lacking area of computer users about their posture. From the study of the researcher can identify the most vulnerable area the body where the prevalence of work related mechanical neck pain is at higher rate. Thus the computer users can be aware about the poor posture of that particular area. It has been shown in a study that technical computer operators are highly affected. Physiotherapy is a developing health profession in Bangladesh. As a specialized health profession in musculoskeletal disorder, physiotherapy is one of the responsible health professions for treating and managing neck pain. Physiotherapists work in large spectrum including mechanical neck pain phenomenon. They can also work in the Information technology. Farm as consultant or visiting therapist to evaluate and provide advocacy and treatment to lessen the suffering (Buckle, 2005).

They can work in promoting preventive program regarding associated risk factors in computer operating tasks. Occupational health and safety regarding neck pain will be a new side to establish and promoting professional competence and development. It is an emerging area in perspective of Bangladesh where physiotherapist can work to gather information about percentage, prevalence and severity of neck pain symptoms. Research in this area can establish the skills of physiotherapists be a base for spreading the profession in a new dimension in Bangladesh. For considering these issues researcher is keen to conduct this research.

1.5. Research Question

What is the Impact of mechanical neck pain on activities of daily living for computer users?

1.6. Objectives

1.6.1. General objectives

- To find out the impact of mechanical neck pain on activities of daily living for computer users.

1.6.2. Specific objectives

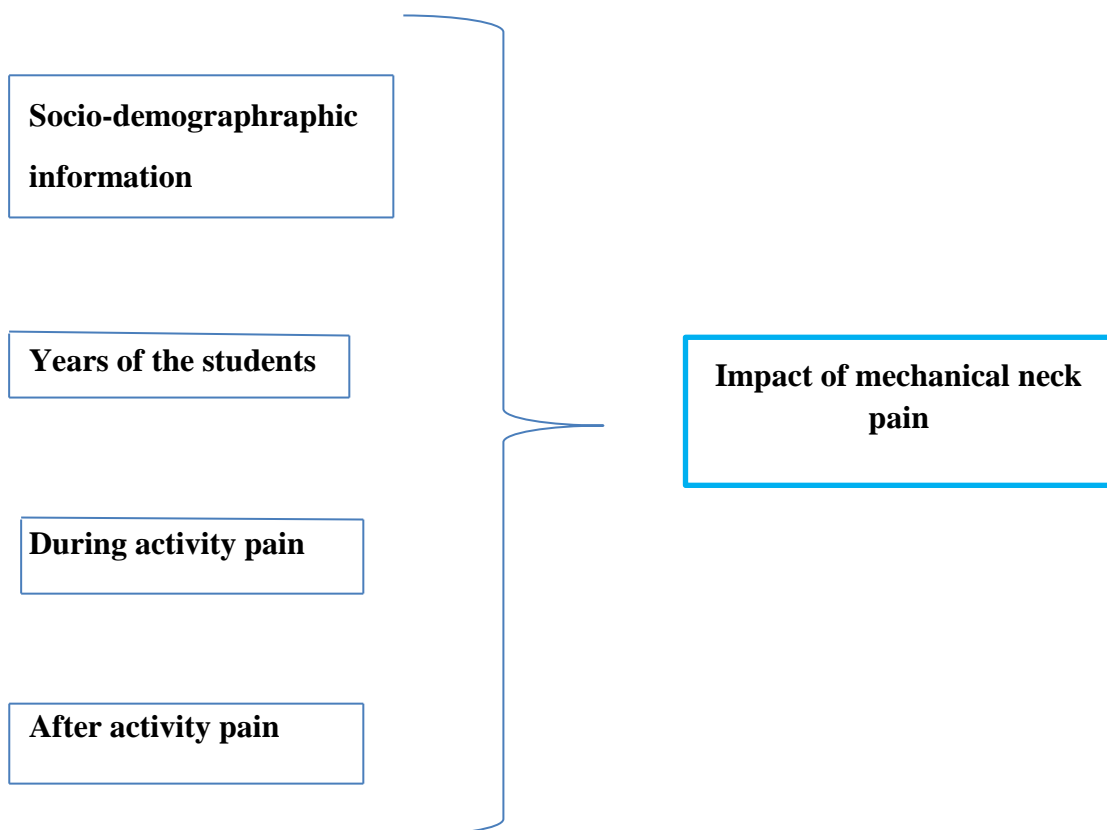
- To determine the sociodemographic factors of participants of mechanical neck pain.
- To identify the percentage of neck pain among the computer users.
- To identify the resting pain after activity.
- To identify the during activity pain.
- To determine which year affected most in neck pain among the computer users.
- To identify the duration of neck pain

1.7. List of Variables

Conceptual Framework

Independent variables

Dependent variable



1.8. Operational definitions

1.8.1. 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.

1.8.2. Mechanical neck pain: Mechanical neck pain is the general term that refers to any type of neck pain caused by placing abnormal stress and strain on muscles of the vertebral column. Typically, mechanical pain results from bad habits, such as – poor posture, poorly designed seating, incorrect bending & lifting motions. Individuals with neck pain that lack an identifiable pathoanatomic cause for their symptoms are usually classified as having mechanical neck pain. Direct pathoanatomic cause of mechanical neck pain is rarely identifiable. Although the cause of neck pain may be associated with degenerative processes or pathology identified during diagnostic imaging, the tissue that is causing a patient's neck pain is most often unknown. Mechanical neck pain commonly arises insidiously and is generally multifactorial in origin, including one or more of the following: poor posture, anxiety, depression, neck strain, and sporting or occupational activities.

1.8.3. Management: Physiotherapy approach the management of mechanical neck pain is with a plethora of interventions such as manual therapy, therapeutic exercises, modalities, massage and functional training etc.

Pain is an unpleasant emotional state felt in the mind but identifiable as arising in a part of the body. In other word it is a subjective sensation. Pain is a defense mechanism designed to make the subject protect an injured part from further damage (Wilde et al., 2007). By any measure, pain is significantly a global health problem. Globally, it has been reported that 1 in 5 adults suffer from pain. Pain can experience acute, chronic, or intermittent, or a combination of the three. Pain is a multivalent, dynamic, and ambiguous phenomenon; it is notoriously difficult to quantify (Goldberg & McGee, 2011).

The non-communicable diseases have been dramatically rising all over the world especially musculoskeletal diseases which considered one of the major causes of morbidity throughout the world. Neck pain is one of the common musculoskeletal disorders that affects millions of workers throughout the world across variant works or sectors of services. Most of them were married 72.3% when compared to 27.7% were single. In terms of age, between 18-29 years of age people, the rate of Neck pain is about 44.2%. In terms of BMI, 36% obese are most likely to have Neck pain (Mustafa & Sultan, 2013).

For people who spend a great deal of time using computers, neck pain is a common problem. There has been a great technological advance in computers along with an industrial shift to a more service oriented economy (Cote et al., 2007).

Work-related musculoskeletal disorders (WMSDs) are a group of painful disorders of muscles, tendons, and nerves. Carpal tunnel syndrome, tendonitis, thoracic outlet syndrome, and tension neck syndrome are examples of such conditions. Work activities which are frequent and repetitive, or activities with awkward postures cause these disorders which may be painful during work or at rest (Das & Ghosh, 2010).

Studies generally address repetition as cyclical work activities that involved either repetitive neck movements or repetitive arm/shoulder motions that generate loads to neck/shoulder area (e.g trapezius muscle) (Rajagopal et al., 2012).

Most of the studies that examined repetition or repetitive work as a potential risk factors for neck/shoulder MSDs. Force or forceful work or heavy loads to the neck/shoulder or described strenuous work involving the upper extremity that generate loads to the trapezius muscles. Neck or head postures, adverse or extreme head or neck postures or static postures of the head/neck can cause works related musculoskeletal disorders (Lee et al., 2011).

Age play an important role in the development of different health problems. As working age increases musculoskeletal complains of musculoskeletal symptoms may become high. WRMSDs affect man and women in their best productive years with the peak frequency of symptoms occurring in the age range 30-55(Griffiths, 2006). Again the literature shows that 22-60 age range is more prone to get WRMDs (Jayawardana et al., 2011).

The physical capacity of worker varies by gender (male and female). Gender has been suggested as an independent risk factor for the development of repetitive strain injuries. Gender differences are proved in many studies as women are more vulnerable to develop musculoskeletal symptoms than men (Srilatha et al., 2011). A study conducted in ASIA shows that both male and female are affected by neck pain the percentage is 55% and 52% respectively (Ranasinghe et al., 2011).

Static positioning has becoming an issue of equal importance to repetitive motion in office work. Numerous office workers spend many hours each day performing work at the computer, with little opportunity to move around or change position which causes stiffness and fatigue occur in response to static postures (Sanders, 2004). The risk of work practices are prolonged static posture, poor posture, repetitive movements and forces. All of these factors may act separately, but the risk is greater if several risk factors work together. Software programmers who work for long time are at high risk of WRMSDs (Keshawi et al., 2008).

A study in USA shows that the employers working at least 2 year on computer complain about neck pain (Palmer et al., 2008). A study in USA shows that the employers working for 6-9 hour on computer complain about neck pain (Palmer et al, 2008).

The rules of good body mechanics suggest the natural body postures are most effective. Postures at the end range can be considered awkward. Common awkward postures observed in the office environment involve the neck. Prolonged awkward posture of neck and upper extremities can contribute to complaints of pain, paresthesia and numbness (Sanders et al., 2004).

In recent decades, work-related mechanical pain among computer users are receiving a growing attention. The current study included 130 participants of computer operators of a communication company. About 55.4% of them were females and 44.6% were males. Some risk factors for developing neck pain among computer user are as duration of employment, body mass index, boring work, psychosocial troubles and chronic headache (Hagag et al., 2011).

The computer helps a company minimize inefficiencies in the workplace by eliminating wasteful tasks as office workers no longer need to leave the desk to retrieve mail, copy or file documents. This streamlining and increase in productivity through elimination of inefficiencies related to specific tasks has some unfortunate consequences for the worker; there is a reduction in the number of breaks available from repetitive or static job tasks which help to restore health (Brattberg et al., 2007).

Pain in the neck is an unpleasant sensory and emotional experience in the neck area associated with actual or potential tissue damage or described in terms of such damage and it is an unspecified pain symptom (or syndrome) rather than a clinical sign. Perhaps age, culture, previous pain experiences and emotional factors such as joy, grief, fear, excitement, and the patient's beliefs and attitudes toward pain (Vaajoki, 2013). Although it is not life threatening, it can cause a sense of being unwell and substantial level of disability due to pain and neck stiffness. This disability can affect the physical functioning of the patients leading to sickness behavior and activity restrictions. In general population, the 12-month prevalence of activity limiting pain has been reported to vary from 1.7% to 11.5% (Leonard et al., 2009).

Neck pain can be experienced as acute, chronic or intermittent or a combination of the three. Pain is a multivalent, dynamic and ambiguous phenomenon which is notoriously difficult to quantify. The International Association for the Study of Pain (IASP) in its classification of chronic pain defines cervical spinal pain as pain perceived anywhere in the posterior region of the cervical spine, from the superior nuchal line to the first thoracic spinous process (Misailidou et al., 2010). The Bone and Joint Decade 2000-2010 Task Force on Neck Pain and Its Associated Disorders describes neck pain as pain the posterior neck region from the superior nuchal line to the spine of the scapula and the side region down to the superior border of the clavicle and the suprasternal notch (Sherman et al., 2014). In addition, Ylinen (2007) defines typical characteristics of chronic neck pain with differential time duration from other types of neck pain.

On the basis of area-

Axial pain is Musculoskeletal, and is pure neck or soft tissue pain. Whiplash or muscle strain is an example.

Cervical radiculopathy refers to neck and arm pain due to nerve root compression. Symptoms include arm pain, numbness or weakness.

Myelopathy refers to pressure on the spinal cord, also referred to spinal cord compression. Symptoms include: neck pain with arm and/or leg weakness, numbness, or walking problem.

On the basis of intension-

It occurs suddenly from an injury or stress. Most of the time neck pain will resolve itself within 7-10 days with rest, ice, and over the counter pain relievers. For symptoms that persist longer than a few weeks, a thorough evaluation by a primary care physician is recommended. The physician will generally obtain x-rays and MRIs, and prescribe conservative therapy (Cote et al., 2007).

It is defined as neck pain lasting longer than three months. People who have not found relief through conservative treatments, and suffer from chronic pain may benefit from pain management or surgical intervention (Neck pain explained.com, 2007).

Neck pain can result from a variety of causes, ranging from overuse injuries and whiplash to diseases such as rheumatoid arthritis and meningitis. Muscles strains- Overuse, such as too many hours hunched over a steering wheel, often triggers muscle strains. Neck muscles, particularly those in the back of your neck, become fatigued and eventually strained. When you overuse your neck muscles repeatedly, chronic pain can develop. Even such minor things as reading in bed or gritting your teeth can strain neck muscles. Worn joints-Just like all the other joints in your body, your neck joints tend to experience wear and tear with age, which can cause osteoarthritis in your neck. Nerve compression-A variety of problems in your neck's vertebrae can reduce the amount of space available for nerves to branch out from the spinal cord. Examples include: Stiffened disks- As you age; the cushioning disks between your vertebrae become dry and stiff, narrowing the spaces in your spinal column where the nerves exit. Herniated disks- This occurs when the inner gel-like material of a disk protrudes through the disk's tougher outer covering. The protrusion can press on nerves exiting the spinal column, causing arm pain or weakness, or on the spinal cord itself. Bone spurs. Arthritic joints in your neck can develop bony growths that may press on nerves. Injuries-Rear-end collisions often result in whiplash injuries, which occur when the head is jerked forward and then backward, stretching the soft tissues of the neck beyond their limits (Neck pain explained.com, 2007).

We can see some trends for those of us who are at risk and take some measures to help prevent neck pain or use as a guide for intervention. A total of 45.5% of the population studied reported neck pain in the past 12 months, of which 18.1% complaint of continuous neck pain. A total of 64.3% of the patients reported that there was a relation between their current job and the neck complaints. A total of 56.2% even mentioned that their complaints started during the current job. A total of 10.2% reported sick leave due to neck complaints. The work place and equipment were adapted in 24% of the patients due to neck pain. Work time was changed due to the same reason (Bernaards et al., 2006).

Analyses of the association between neck pain and work related physical factors, revealed that neck pain was significantly associated with often holding the neck in a forward bent posture for a prolonged time, various short periods of movements with the neck, often working in the same position for a prolonged time, often making the same movements per minute, often sitting for a prolonged time, dry air and temperature fluctuation, and computer working time. Often holding the neck in a forward posture for a prolonged time, and working in the same position for a prolonged time were significantly associated with neck pain. There is a positive relation between forward bending of the neck (neck flexion) and neck pain, suggesting an increased risk of neck pain for those who spent a high percentage of the working time with the neck at a minimum of 20° of flexion(Cote et al., 2007).

Often making the same movements per minute was significantly associated with neck pain. When performing work with the hands and fingers, the muscles in the neck and shoulder region must usually act as stabilizers. Static contraction of the trapezius and other shoulder muscles is needed to keep the arms at right angles, a necessary posture when using the keyboard. The contraction is accentuated when there is also rotation or bending of the neck when the computer screen is placed to the side of the worker, not in front which is the recommended position. Pain may also be attributed to changing muscle patterns reflecting more the personal habitual movements and postures rather than the influence of their workstations alone (Hoving et al., 2009).

A significant positive relation was found between sitting posture and neck pain. Previous studies found that workers who sat for more than 95% of the working time the risk of neck pain was twice as high as for worker who hardly ever worked in a sitting position. The risk for neck pain increases with the time spent working in a sitting position, suggesting a clear relation between sitting posture and neck pain. A study reported a relation between sitting for more than 5 hours a day and self-reported neck pain. Remaining seated for long periods, usually accompanied by curvature of the spine, increases pressure on vertebral discs, ligaments, and muscles (Gross et al., 2010).

Some climatological conditions (dry air and temperature fluctuation) seem to be a significant predictor for neck pain. Studies found a positive association between the different aspects of physical work environment and neck pain. It has been demonstrated that inadequate thermal comfort was associated with neck symptoms. There is a possibility that subjects with neck pain may have a different perception of their work environment (Hoving et al., 2002). Analyses of the association between neck pain and work related physical factors, revealed that neck pain was associated with computer working time (Cote et al., 2007).

Neck pain affects 30–50% of the general population annually.

15% of the general population will experience chronic neck pain (>3 months) at some point in their lives. 11–14% of the working population will annually experience activity limitations due to neck pain. Prevalence peaks at middle age, and women are more often affected than men.

Risk factors include repetitive work, prolonged periods of the cervical spine in flexion, high psychological job strain, smoking, and previous neck/shoulder injury (Falla, 2008).

The West and the Midwest of the Asia are the regions where the prevalence of neck pain is highest; the South has the lowest prevalence. Prevalence of neck pain is highest among poor respondents. Age groups of 20-28 prevalence of neck pain that's range 31.1%–32.2%, but the group aged 18 to 44 years had a lower prevalence and which is 23.9%. White women had the highest rate of prevalence of neck pain (18.0%), followed by Hispanic women (16.8%), white men (13.2%), and African American women (12.6%) (Paul, 2008). In Europe, Chronic pain is common and that chronic pain affects negatively many aspects of quality of life, and that patients with long lasting pain experience a multitude of negative attitudes and distrust from health care providers, from colleagues, families and acquaintances. Chronic pain of moderate to severe intensity occurs in 19% of adult Europeans, seriously affecting their daily activities, social and working lives (Breivik et al., 2006). The recent increase in computer-related work as a consequence of rapid industrialization has considerably increased the prevalence of Complain of neck pain among computer office workers not only in western developed countries but also in developing countries such as Sudan and Sri Lanka. In Sri Lanka,

36.7% of people with computer related worker have been affected on neck pain. Modification of incorrect postures at work and improvements in the ergonomic designs of workstations could be important not only as primary preventive strategies but also as a secondary preventive measure in those with symptoms (Ranasinghe et al., 2011). Neck pain is a common source of disability. About 14.6% of population having neck pain with disability under the basis of age and gender. Neck pain is a disabling condition with a course marked by periods of remission and exacerbation. Contrary to prior belief, most individuals with neck pain do not experience complete resolution of their symptoms and disability (Cote et al., 2004).

Out of 309 respondents, 28(9.1%) were married and 281(90.9%) were unmarried. There were 101(32.7%) males and 208(67.3%) females. 45(14.6%) respondents used computer and 49(15.9%) used laptop. Neck pain was more common in females. It was more common in middle class computer operator women than others. 67.3% had localized neck pain and 32.7% radiating neck pain. Neck pain is more common in those who used computer for 1-3 hours. Neck pain occurs due to wrong posture (Nadeem et al., 2017).

Neck pain may arise from diverse potential causes that include trauma (fractures/ whiplash injuries), infections, tumor, inflammation and congenital disorders. In the majority of patients, no serious underlying pathology can be identified and these patients are labelled as suffering from non-specific neck pain. Predisposing risk factors for non-specific neck pain include age, gender, occupation, physical and mental stress, previous injury, work posture, psychosocial issues, work environment, cycling, previous history of back pain and sedentary life style (Jayamoorthy et al., 2014).

Johnson and Cordett (2014) stated that physical examination of the cervical spine infrequently contributes to general observation, palpation, active, passive, resisted movements and special test for cervical spine. General observation examining posture, symmetry, muscle bulk and previous scars should be part of the observation. Palpation of the cervical spine may elicit focal tenderness which is the appropriate clinical context may increase the clinician's suspicion for threatening pathology.

A neurological examination most commonly emphasis on any upper (example: cord compression) or lower (nerve root) motor neuron involvement and potential myotome & dermatomal involvement to localize an anatomical level. Provocative maneuvers such as neck compression and upper limb tension tests did not have adequate sensitivity or specificity to be recommended as routine practice (Nee et al., 2012).

In emergency case, a plain x ray of cervical spine was recommended for the early diagnosis of the source of neck pain. Conversely, Pompan (2011) stated that magnetic resonance imaging (MRI) was found highly effective for the diagnosis of neck pain.

Neck pain managed by pharmacological and physiotherapy treatment. They response in different way. The review found seven different types of exercise such as neck flexion exercises, range of motion exercises, isometric strengthening exercises, and dynamic resistance strengthening exercises, shoulder range of motion or strengthening exercises, stretching and general exercise programs. The duration of the exercise programs ranged from 6 weeks to 12 months.

Physical Therapist assess an individual's physical ability to do a specific job or activity and aids in developing a safe return to work program (Occupational health solution). All exercises should be performed slowly and comfortably to avoid injury. When performing strengthening and flexibility exercises, remember to breathe naturally and do not hold breath; exhale during exertion and inhale during relaxation. A program of strengthening, stretching, and aerobic exercises will improve overall fitness level. Research has shown that people who are physically fit are more resistant to back injuries and pain and recover quicker when they do have injuries than those who are less physically fit (Joel & Press, 2008).

Help increase muscle tone and improve the quality of muscles. Muscle strength and endurance provide energy and a feeling of wellness to help you perform daily, routine activities (Joel & Press, 2008). Ensuring the correct alignment of the spine is essential to avoiding neck pain. This includes sitting, standing and sleeping (Tone et al., 2007).

Use equipment that isn't too heavy, that can be used without awkward upper body posture and that feels comfortable to use. Ergonomically designed equipment helps to minimize stresses on the upper extremities and the back (Lacerda et al., 2010). Avoid long appointments where possible, or intersperse these with frequent short rest breaks in which you change posture and relax the upper extremities (Alan et al., 2008).

3.1. Study Design:

The aim of the study was find out impact of neck pain on activities of daily living for computer users. The Cross sectional study was conducted. Survey research as a method of collecting data used which involved related sample variable (often using a questionnaire) without any form of manipulation or systemic intervention.

3.2. Study population and sample population:

A population was 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 students who using computer at Jahangirnagar University, Savar. The sample population or sample is a relatively small subset of population that is selected to represent or stand in for the population (Heiman, 1995). 60 Student were selected for this study as sample.

3.3.1. Study Site:

Jahangirnagar University, Savar

3.3.2. Study Area:

Student of Jahangirnagar University, Savar

3.4. Sample Size:

Sampling procedure for cross sectional study done by following equation-

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

Here,

$$Z (1- \alpha/2) = 1.96$$

$$P= 0.78 \text{ (Jaykaran \& Tamoghna, 2011)}$$

$$q= 1-p$$

$$d= 0.05$$

So the researcher aimed to focus his study by 200 samples following the calculation above initially. But as the study was done as a part of fourth professional academic research project and there were some limitations, so the researcher had to limit with 60 students as sample.

3.5. Inclusion Criteria

Both male and female: Both male and female selected who are using computer (Aysha & Faizan, 2016).

Age range between 20 to 28 years: Students of 20-28 years age group who using computers more than 6 hours a day and weekly more than 36 hours (Aysha & Faizan, 2016).

Willingness: Subject who were willing to participate in the study (Gautam et al., 2014).

Cooperative: Subject who can understand or follow verbal instructions (Plummer et al., 2017)

3.6. Exclusion Criteria:

Subject who are not interest: some patients were excluded as they have the chance to drop out during the study & that can have bad impact on the results of the study (Halvorsen et al., 2014).

Red flags of neck pain: participants were excluded if they have any specific medical condition affecting the neck (such as ankylosing spondylitis, tumors, infection and rheumatoid arthritis (Aysha & Faizan, 2016).

Surgery: Any previous surgery that cause neck pain (Aysha & Faizan, 2016).

3.7. Sampling technique:

Samples were selected conveniently from CSE department students who studying at CSE department at Jahangirnagar university, Savar, Dhaka. There are a lot of students in Jahangirnagar University, from this population it was selected 60 samples, according to the inclusion and exclusion criteria. Because it was not possible to study the total population within the time of this study.

3.8. Data collection instrument and tools:

Questionnaire, consent forms, pen, papers, pen drive, SPSS (Statistical Package for the Social Sciences) software to analyze data, Harvard Referencing and computer.

3.9. Data collection procedure:

A questionnaire was set up. Then researcher had taken permission of the authority of her institution to conduct the survey. After that, computer users were selected who had met the inclusion and exclusion criteria. Then a face to face interview is conducted with the consent of the sample. According to the answer of the sample questionnaire was filled up by the researcher.

3.10. Informed consent:

Before conducting research with the respondents, it is necessary to gain consent from the subjects. For this study interested subjects are given consent forms and the purpose of the research and consent forms are explained to the subject verbally. They are tell that participation is fully voluntary and they have the right to withdraw at any time. They are also tell that confidentiality will be maintained. Information might be published in any presentations or writing but they will not be identified. The study results might not have any direct effects on them but the members of Physiotherapy population may be benefited from the study in future. They would not be embarrassed by the study. At any time the researcher will be available to answer any additional questions in regard to the study.

3.11. Ethical consideration:

The whole process of this research project was done by following the Bangladesh Medical Research Council (BMRC) guidelines and World Health Organization (WHO) Research guidelines. The proposal of the dissertation including methodology was approved by Institutional Review Board and obtained permission from the concerned authority of ethical committee of Bangladesh Health Professions Institute (BHPI). A research proposal is submitted to local ethical review committee of Bangladesh Health Professions Institute (BHPI) for being approval. At first, I applied for official permission for the study and data collection from the head of the Physiotherapy Department of CRP through the computer science and engineering department of Jahangirnagar university, Savar, Dhaka. Then I took permit the head of the CSE Department of ju for permitted me to collect data at CSE department JU, Savar, Dhaka. The researcher strictly maintained the confidentiality regarding participant's condition and treatments.

Socio-demographic information

4.1. Age of the Participants:

Among 60 participants, 63.9% (n=39) were between 19-21 years age range and 34.4% (n=21) were between 22-24 years age. The mean age is 19 and 23. The standard deviation is 0.759 and 0.910.

Table no 1: Age of the students

Age	Frequency	Percentage	Mean	Standard deviation
19-21 years	39	63.9%	19	± 0.759
22-24 years	21	34.4%	23	± 0.910

4.2. Gender of the participants:

Among 60 participants 51.7% (n=31) were males and 48.3% (n=29) were females.

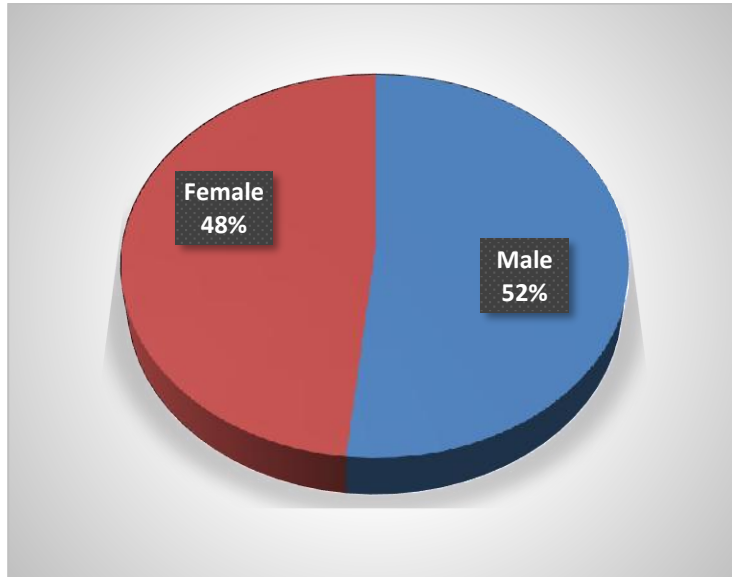


Figure 1: Gender of the participants

4.3. Year of the Students:

Among 60 participants 25% (n=15) were studying in 1st year, 25% (n=15) were in 2nd year, 25% (n=15) were studying in third year and rest of 25% (n=15) were in fourth year.

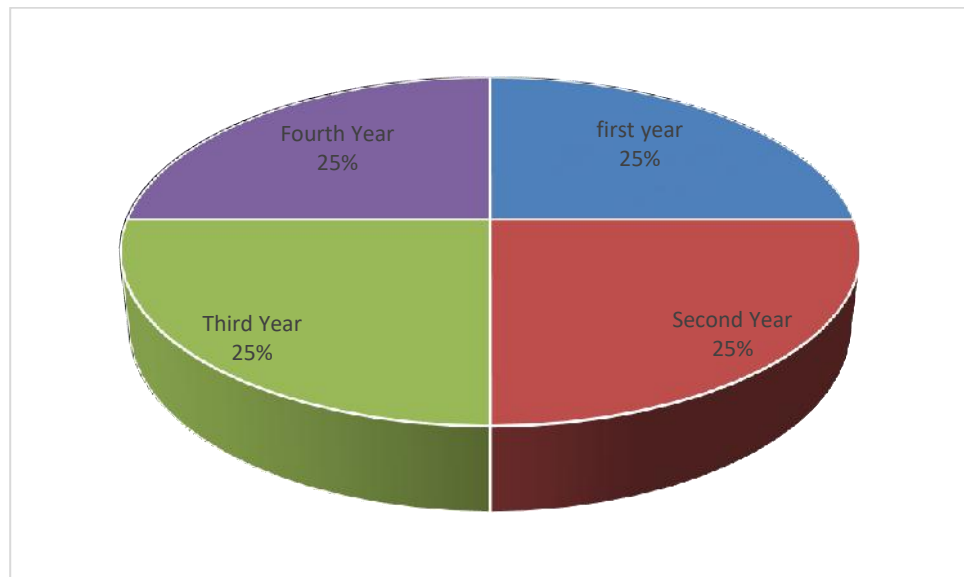


Figure 2: Year of the students

Pain related information

4.4. Resting pain status:

Among 60 participants, there 78.3% (n=47) students were suffering from mild neck pain which scale is (0-3), 13.3% (n=8) were suffering from moderate neck pain which scale is (4-7) and rest in 8.3% (n=5) were suffering from severe neck pain which scale is (8-10).

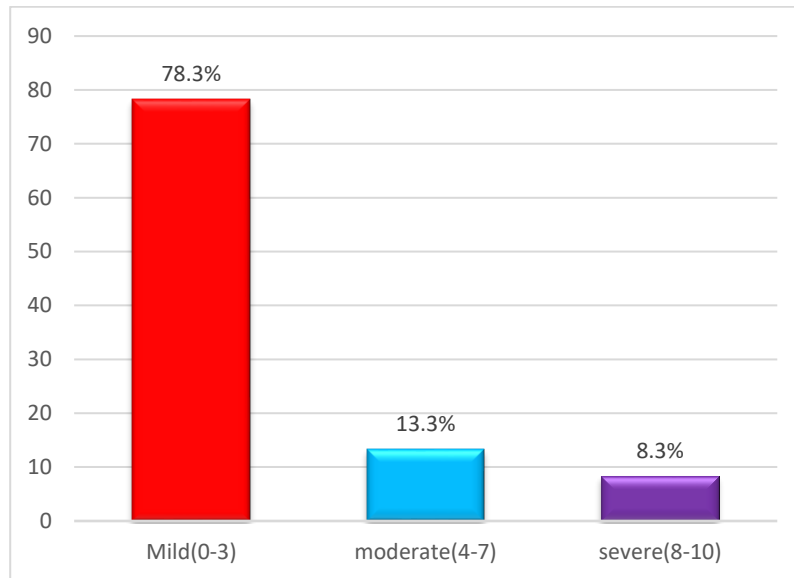


Figure 3: Resting pain status

4.5. During activity Pain Status:

Among 60 participants, there 51.7% (n=31) students were suffering from mild neck pain which scale is between (0-3), 35% (n=21) were suffering from moderate neck pain which scale is between (4-7) and rest of 13.3% (n=8) were suffering from severe neck pain which scale is between(8 – 10) .

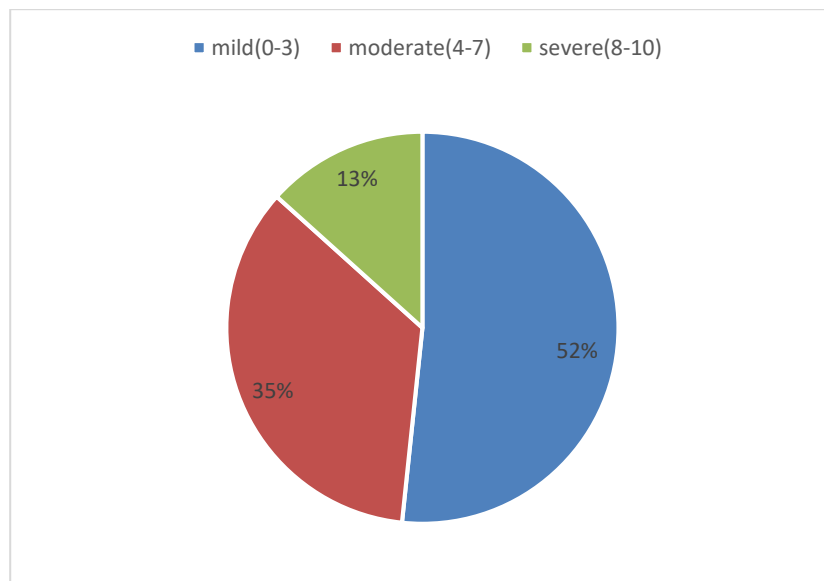


Figure 4: During activity pain status

4.6. Pain perception among participants (according to NDI scoring):

Among 60 participants the chart shows that there 48.3% (n=29) students they have no pain according to neck disability index the rang is (0-8)% which indicate mild disability, 36.7% (n=22) students they have mild neck pain according to neck disability index the range is (10-28)% which indicate mild disability , 6.7% (n=4) students they have moderate neck pain according to neck disability index the range is (30-48)% which indicate moderate disability , 5% (n=3) students they have severe neck pain according to neck disability index the range is (50-64)% indicate that moderate disability and rest of 3.3% (n=2) students they have more severe neck pain according to neck disability index the range is (70-100)% indicate complete disability. .

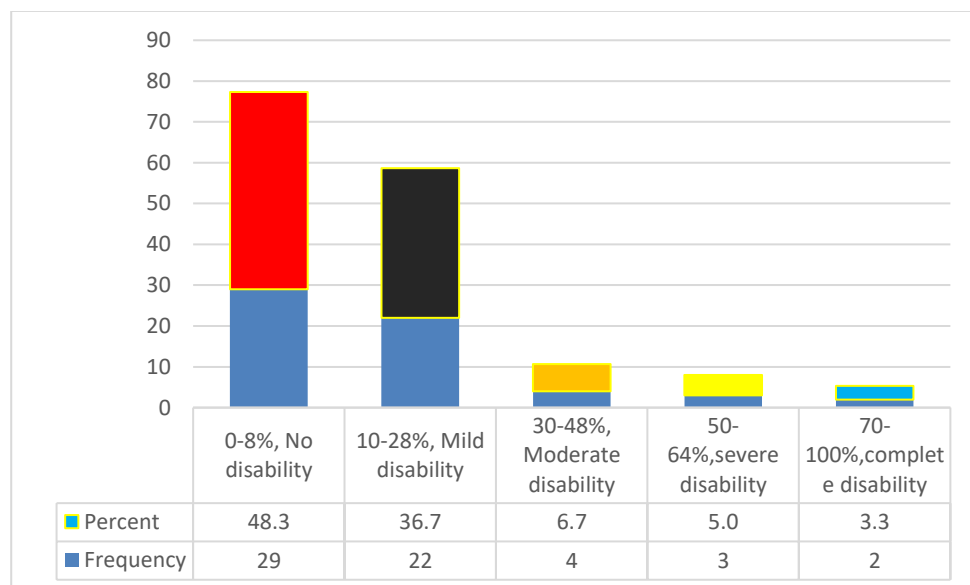


Figure 5: Pain perception among participants

4.7. Duration of neck pain

Among 60 students (n=21) students were suffered neck pain from 1month , 16 students were neck pain from 2 month , 9 students were suffered neck pain from 6month , 4 students were suffered neck pain from 8 month, 3 students were suffered neck pain from 10 month and rest of 1 students were suffered neck pain from 1 year.

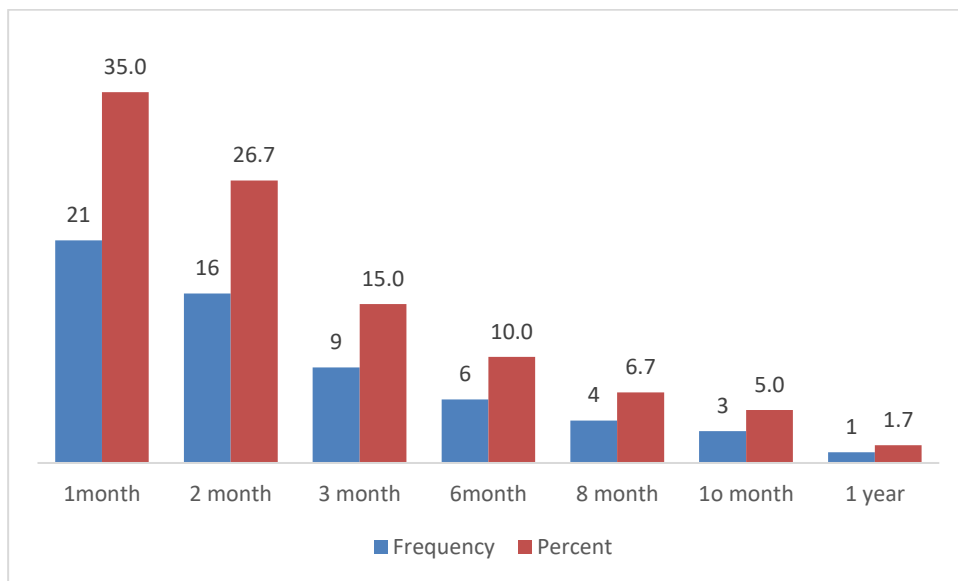


Figure 6: Duration of neck pain

4.8. Distribution between (19-21years) age of the students and neck disability scoring:

From below table 2 the observed chi square value was found 8.879 for pain intensity, 12.991 for personal care, 10.909 for lifting, 15.793 for reading, 11.004 for headache, 12.103 for concentration, 4.912 for work, 11.252 for travelling, 14.182 for sleeping and 12.944 for recreation. Their p value was 0.544, 0.224, 0.365, 0.045, 0.357, 0.278, 0.555, 0.188, 0.165 and 0.112. Their age range was (19-21) years. The result was not significant because all the p value was more than 0.05. so the result shows that there was no relationship between (19-21) years student and neck disability index.

Table no 2: Distribution between (19-21 years) age of the students and neck disability scoring

Age range	Component of neck disability index	Chi square value	P value	Significant
19-21	Pain intensity	8.879	0.544	No significant
	Personal care	12.991	0.224	No significant
	Lifting	10.909	0.365	No significant
	Reading	15.793	0.045	No significant
	Headache	11.004	0.357	No significant
	Concentration	12.103	0.278	No significant
	Work	4.912	0.555	No significant
	Travelling	11.252	0.188	No significant
	Sleeping	14.182	0.165	No significant
	Recreation	12.944	0.112	No significant

4.9. Distribution between (22-24years) age of the students and neck disability scoring :

Table no 3: Distribution between (22-24years) age of the students and neck disability scoring

Age range	Component of neck disability index	Chi square value	P value	Significant
22-24	Pain intensity	8.250	0.509	No significant
	Personal care	9.533	0.146	No significant
	Lifting	9.561	0.387	No significant
	Reading	7.867	0.548	No significant
	Headache	11.504	0.243	No significant
	Concentration	7.750	0.560	No significant
	Work	12.025	0.061	No significant
	Travelling	13.571	0.138	No significant
	Sleeping	14.823	0.022	Significant
	Recreation	10.207	0.116	No significant

From above table 3 the observed chi square value was found 8.250 for pain intensity, 9.533 for personal care, 9.561 for lifting, 7.867 for reading, 11.504 for headache, 7.750 for concentration, 12.025 for work , 13.571 for travelling, 14.823 for sleeping and 10.207 for recreation. Their p value was 0.509 , 0.146 , 0.387, 0.548, 0.243 , 0.560, 0.061, 0.138, 0.022 and 0.116. Their age range was (22-24) years. The significant result was sleeping and their P value was 0.02 because the p value was not more than 0.05.

4.10. Distribution between male students and neck disability index scoring:

Table no 4: Distribution between male students and neck disability index scoring

Gender	Component of neck disability index	Chi square value	P value	Significant
Male	Pain intensity	16.095	0.586	No significant
	Personal care	15.105	0.655	No significant
	Lifting	22.987	0.521	No significant
	Reading	21.244	0.267	No significant
	Headache	35.411	0.008	Significant
	Concentration	26.075	0.098	No significant
	Work	12.651	0.395	No significant
	Travelling	19.571	0.357	No significant
	Sleeping	11.080	0.522	No significant
	Recreation	20.956	0.282	No significant

From data table 4 the male chi square value was observed 16.095 for pain intensity, 15.105 for personal care, 22.987 for lifting, 21.244 for reading, 35.411 for headache, 26.075 for concentration, 12.651 for work , 19.571 for travelling, 11.080 for sleeping and 20.956 for recreation. Their p value was 0.586 , 0.655 , 0.521, 0.267, 0.008 , 0.098, 0.395, 0.357, 0.522 and 0.282 . Their was significant value was 0.008. The result shows that there was relationship between male and headache.

4.11. Distribution between female students and neck disability index scoring:

From data table 5 the observed female chi square value was 0.853 for pain intensity, 24.552 for personal care, 31.290 for lifting, 27.393 for reading, 39.783 for headache, 19.304 for concentration, 19.400 for work, 21.222 for travelling, 22.225 for sleeping and 16.087 for recreation. Their p value was 0.853, 0.747, 0.401, 0.286, 0.109, 0.933, 0.368, 0.626, 0.846 and 0.587. There had no any significant result.

Table no 5: Distribution between female students and neck disability index scoring

Gender	Component of neck disability index	Chi square value	P value	Significant
Female	Pain intensity	22.025	0.853	No significant
	Personal care	24.552	0.747	No significant
	Lifting	31.290	0.401	No significant
	Reading	27.393	0.286	No significant
	Headache	39.783	0.109	No significant
	Concentration	19.304	0.933	No significant
	Work	19.400	0.368	No significant
	Travelling	21.222	0.626	No significant
	Sleeping	22.225	0.846	No significant
	Recreation	16.087	0.587	No significant

4.12. Distribution between resting pain status after work of the students and neck disability index scoring:

Table no 6: Distribution between resting pain status after work of the students and neck disability index scoring

Pain rated	Component of neck disability index	Chi square value	P value	Significant
Resting pain status and neck disability index	Pain intensity	59.137	0.000	Significant
	Personal care	63.151	0.000	Significant
	Lifting	49.033	0.000	Significant
	Reading	35.504	0.000	Significant
	Headache	37.794	0.000	Significant
	Concentration	53.120	0.000	Significant
	Work	33.401	0.000	Significant
	Travelling	42.952	0.000	Significant
	Sleeping	58.975	0.000	Significant
	Recreation	57.321	0.000	Significant

From table 6 the observed chi square value was 59.137 for pain intensity, 63.151 for personal care, 49.033 for lifting, 35.504 for reading, 37.794 for headache, 53.120 for concentration, 33.401 for work, 42.952 for travelling, 58.975 for sleeping and 57.321 for recreation. Their p value was 0.000. The result was significant because the p value was less than 0.05. So, there was strong relationship between resting pain status and neck disability index. Among 60 participants the figure shows that there 60% (n=28) participants have no disability, 24% (n=18) participants have mild disability, 10% (n=1) participants have moderate disability, 5% (n=0) participants have severe disability, 1% (n=0) participants have complete disability which resting pain status scale have between mild (0-3). On the other part of the figure shows that (n=1) participants have no disability, (n=4) participants have mild disability, (n=2) participants have moderate disability,

ity, (n=1) participants have severe disability and (n=0) participants have complete disability which resting pain status scale is between moderate (4-7). Another part of figure shows that (n=0) students have no disability, (n=0) participants have mild disability, (n=1) participants have moderate disability, (n=2) participants have severe disability and (n=2) participants have complete disability which resting pain scale was between severe8 & severe10). After analysis the result the figure shows that maximum students about 60% students have no disability, 24% have mild disability, 10 % students have moderate disability, 5% students have severe disability and 1% have complete disability.

4.13. Distribution between during activity pain of the students and neck disability index scoring:

Table no 7: Distribution between during activity pain of the students and neck disability index scoring

Pain rated	Component of neck disability index	Chi square value	P value	Significant
During pain activity and neck disability index	Pain intensity	68.688	0.000	Significant
	Personal care	49.937	0.000	Significant
	Lifting	55.796	0.000	Significant
	Reading	66.227	0.000	Significant
	Headache	43.506	0.000	Significant
	Concentration	48.761	0.000	Significant
	Work	32.848	0.000	Significant
	Travelling	35.384	0.000	Significant
	Sleeping	42.300	0.000	Significant
	Recreation	51.617	0.000	Significant

From table no 7 the observed chi square value was 68.688 for pain intensity, 49.937 for personal care, 55.796 for lifting, 66.227 for reading, 43.506 for headache, 48.761 for concentration, 32.848 for work, 35.384 for travelling, 42.300 for sleeping and 51.617 for recreation. Their p value was 0.000. The result was significant because the p value was less than 0.05. So, there was strong relationship between during activity pain status and neck disability index. Among 60 participants the result found that there 60% (n=26) participants have no disability, 24% (n=4) participants have mild disability, 10% (n=1) participants have moderate disability, 5% (n=0) participants have severe disability, 1% (n=0) participants have complete disability which working pain status scale have between mild (0-3). On the other part of the figure shows that (n=3) participants have no disability, (n=17) participants have mild disability, (n=0) participants have moderate disability, (n=1) participants have severe disability and (n=0) participants have complete disability which working pain status scale is between moderate (4-7). Another part

of figure shows that (n=0) students have no disability, (n=1) participants have mild disability, (n=3) participants have moderate disability, (n=2) participants have severe disability and (n=2) participants have complete disability which working pain scale was between severe (8 -10). After analysis the result the figure shows that maximum students about 60% students have no disability, 24% have mild disability, 10 % students have moderate disability, 5% students have severe disability and 1% have complete disabilities.

4.14. Distribution of 1st year of the students and neck disability index scoring:

Table no 8: Distribution of 1st year of the students and neck disability index scoring

Year of the student	Component of neck disability index	Chi square value	P value	Significant
1 st year	Pain intensity	0.741	0.690	No Significant
	Personal care	2.143	0.343	No significant
	Lifting	3.089	0.798	No significant
	Reading	3.444	0.486	No significant
	Headache	4.773	0.092	No significant
	Concentration	3.444	0.486	No significant
	Work	1.056	0.901	No significant
	Travelling	0.600	0.741	No significant
	Sleeping	0.278	0.870	No significant
	Recreation	1.944	0.378	No significant

From table no 8 the observed chi square value was 0.741 for pain intensity, 2.143 for personal care, 3.089 for lifting, 3.444 for reading, 4.773 for headache, 3.444 for concentration, 1.056 for work , 0.600 for travelling, 0.278 for sleeping and 1.944 for recreation. Their p value was 0.690, 0.343, 0.798, 0.486, 0.092, 0.486, 0.901 , 0.741, 0.870 and 0.378. There had no any significant result. So, there was no relationship between 1st year and neck disability index . Among 60 students the result found that 48.3% (n=8) students have no disability, 27% (n=7) students have mild disability, 6.6% (n=0) students have moderate disability, 5% (n=0) students have severe disability, 3.3% (n=0) students have complete disability which are in first year students.

4.15. Distribution of 2nd year of the students and neck disability index scoring:

Table no 9: Distribution of 2nd year of the students and neck disability index scoring

Year of the student	Component of neck disability index	Chi square value	P value	Significant
2 nd year	Pain intensity	12.917	0.375	No Significant
	Personal care	17.667	0.039	Significant
	Lifting	10.278	0.802	No significant
	Reading	14.167	0.290	No significant
	Headache	5.292	0.808	No significant
	Concentration	10.556	0.567	No significant
	Work	7.222	0.614	No significant
	Travelling	11.111	0.519	No significant
	Sleeping	10.952	0.533	No significant
	Recreation	13.611	0.326	No significant

From table no 9 the observed chi square value was 12.917 for pain intensity, 17.667 for personal care, 10.278 for lifting, 14.167 for reading, 5.292 for headache, 10.556 for concentration, 7.222 for work ,11.111 for travelling, 10.952 for sleeping and 13.611 for recreation. Their p value was 0.375, 0.039, 0.802, 0.290, 0.808, 0.567, 0.614 , 0.519, 0.533 and 0.326. There had one significant result and the result is 0.039 which is less than 0.05 . So, there was relationship between 2nd year student and neck disability index including personal care. Among 60 students the result found that (n=5) students have no disability , (n=3) students have mild disability, (n=3) students have moderate disability, (n=2) students have severe disability , (n=2) students have complete disability which were in second year student.

4.16. Distribution of 3rd year of the students and neck disability index scoring:

Table no 10: Distribution of 3rd year of the students and neck disability index scoring

Year of the student	Component of neck disability index	Chi square value	P value	Significant
3 rd year	Pain intensity	6.750	0.345	No Significant
	Personal care	6.667	0.353	No significant
	Lifting	12.571	0.183	No significant
	Reading	9.933	0.356	No significant
	Headache	15.429	0.219	No significant
	Concentration	8.241	0.513	No significant
	Work	2.103	0.910	No significant
	Travelling	11.952	0.216	No significant
	Sleeping	10.699	0.297	No significant
	Recreation	10.518	0.310	No significant

From table no 10 the observed chi square value was 6.750 for pain intensity, 6.667 for personal care, 12.571 for lifting, 9.933 for reading, 15.429 for headache, 8.214 for concentration, 2.103 for work, 11.952 for travelling, 10.699 for sleeping and 10.518 for recreation. Their p value was 0.345, 0.353, 0.183, 0.356, 0.219, 0.513, 0.910, 0.216, 0.297 and 0.310. There had no any significant result. So, there was no relationship between 3rd year student and neck disability index.

4.17. Distribution of 4th year of the students and neck disability index scoring:

Table no 11: Distribution of 4th year of the students and neck disability index scoring

Year of the student	Component of neck disability index	Chi square value	P value	Significant
4 th year	Pain intensity	23.929	0.004	Significant
	Personal care	5.036	0.169	No significant
	Lifting	14.554	0.104	No significant
	Reading	9.179	0.421	No significant
	Headache	7.727	0.259	No significant
	Concentration	17.143	0.009	Significant
	Work	2.946	0.400	No significant
	Travelling	10.763	0.096	No significant
	Sleeping	14.375	0.026	Significant
	Recreation	7.727	0.259	No significant

From table no 11 the observed chi square value was 23.929 for pain intensity, 5.036 for personal care, 14.554 for lifting, 9.179 for reading, 7.727 for headache, 17.143 for concentration, 2.946 for work, 10.768 for travelling, 14.375 for sleeping and 7.727 for recreation. Their p value was 0.004, 0.169, 0.104, 0.421, 0.259, 0.009, 0.400, 0.096, 0.026 and 0.259. There significant result was 0.004, 0.009, and 0.026. So, there was relationship between 4th year student and neck disability index including pain intensity, concentration and sleeping.

The investigator used a cross sectional study to find out the impact of neck pain on activities of daily living for computer users.

Jacobs et al in 2009 studied that 75.8% of student population use laptops in their educational institutions. According to a study by Smith et al it was noticed that there is increase in laptop ownership from 66% in 2006 to 88% in the year 2009. With increasing tendency of laptop use among students it is clear that research on the prevalence of developing neck pain due to laptop use is essential among this demographic. It is very evident from the results that maximum pain or discomfort is experienced in neck (69.3%). According to a study by Kumari and Pandey (2010) it was also observed that similar type of result with 80% of participants were facing symptoms in neck, back, wrists, forearms, elbows during the usage of computer. Kumari and Pandey (2010) also found that prolonged sitting in awkward or poor postures were the common causes of these symptoms.

The Neck disability index questionnaire is used here. The Neck disability index is a 10 item Scale developed and validated to measure neck disability. This instrument consists of six subscales: Pain intensity, Personal care (washing, dressing), lifting, reading, headache, concentration, work, driving, sleeping, and recreation. Each item of NDI is scored from 0 to 5. The scoring interpretation for the NDI is as follows: 0-4 = none; 5-14 = mild; 15-24 = moderate; 25-34 = severe; over 34 = complete. The NDI was filled by the subject himself/herself. It took about 5 minutes to fill the scale. Pain and disability relationship found in this study was strongly significant ($r=0.798$) and is supported by the study done by Hermann et al (2001) who found a strong positive correlation between pain and Neck Disability Index in patients with cervical spine disorders. Pain intensity is one of the 10 areas addressed on the Neck Disability Index. A relationship between these two variables is therefore expected.

Among 60 students 48% were between 15-20 year age rang and 52% were between. 20-25 year age range. Majority of the participants are young. The mean age is 19 an 22. In the Indian study they use the population of 500 students (112 females and 388 males) were surveyed for the prevalence of neck pain and disability in the age group of 18 to 25yrs (yakshi and richa, 2017). In this study use only 60 students (31 males and 29 females). Among 60 students no disability 11 students have no disability, 13 students have mild disability, 1 students have moderate disabilities, 3 students have severe disability and 1 students have complete disabilities which age range 15-20 years. On the other hand, 18 students have no disabilities, 9 students have mild disabilities, 3 students have moderate disabilities, 0 students have severe disabilities and 1 students have complete disabilities which year rang is (20-25) years.

According to indian research it was found that 4 (0.8%) students had no pain, 261 (52.2%) students had mild pain (0.5-4.4), 182 (36.4%) students had moderate pain (4.5-7.4), 53 (1.6%) students had severe pain (7.5- 10). On further classification it was found that 171 (34.2%) students had no disability, 228 (45.6%) students had mild disability (5-14), 65 (13%) students had moderate disability (15-24), 28 (5.6%) students had severe disability (25-34), and 8 (1.6%) students had complete disability (> 35). (yakshi and rachi, 2017).

Among 60 students the study found that 10 students have fourth year students have no disability. 8 students have moderate disability of third year, 2 students of second year people have severe and complete disability.

Computers have become a necessity during the past few years. Its use is increasing enormously in office workers and students. There is a growing body of literature from multiple universities that has identified universities students experiencing pain related to computer use. Therefore my study found neck pain and disabilities for computer use. This study reiterates the previous findings that neck pain is a common phenomenon among young adults especially university students. The regions with the highest of pain were the neck (62%).

Therefore, preventive measures like ergonomic advice, postural advice and demonstration of neck exercises are to be integrated in places (colleges, schools or workstations) of prolonged use of computers. Engaging computer users in physical activity as part of their work day, frequent micro breaks of 30 seconds once every 20 to 40 minutes are an effective means to reduce neck pain and that these micro breaks have no adverse effect on worker productivity.

Ensuring that computer workstations are arranged to reduce neck flexion (use of document stands, screen height, etc.), use of appropriate chairs, and using rest breaks may help to prevent neck pain. Also the use of neck muscle exercises are useful in treating those who have developed neck pain.

CONCLUSION:

Nowadays various types of computer related neck pain are increasing in Bangladesh due to increasing use of computer tremendously in all sectors to improve the quality of health care system as well as the efficiency of health workers and other workers. Neck pain have great impact causing severe long term pain, physical disability and give rise to huge costs for society. For the fulfillment of this study the investigator used a quantitative research model in the form of a prospective type survey. Conveniently 60 participants among the professional computer users were collected. The investigator used NDI questionnaire. Each participant was given a questionnaire to identify the neck pain among them and from the documents of the participants the researcher forms a data base for the total sample included in the study. From the data base, it was found that maximum participants had neck pain. There was no relationship between gender and age between various component of neck disability index.. The duration of resting length and working situation per day have been played a vital role in developing neck pain. Computer and science department students are suffered for neck pain. Fourth year students are suffer most. Practice of having rest between work positive impacts of neck pain. The participants who sometimes took break was mostly affected; this result sounds odd may be due to participants felt shy to give the right answer or something else. Most commonly affected body part was neck. Most affected participants had no previous history of accident. The participants who were affected most of them attended by physician but had an unknown diagnosis. Most of the participants received treatment among them only a few received physiotherapy along with medication and other treatment.

Limitation of the study:

There were some situational limitations and barriers while considering the study. Those are as follows:

- Though the expected sample size was 200 for this study but due to resource constrain researcher could manage just 60 samples which is very small to generalize the result for the population of the neck pain for physiotherapist.
- The researcher was able to collect data only from the Jahangirnagar University for a short period of time which will affect the result of the study to generalize population of Bangladesh.
- The research was carried out in JU, Savar such a small environment, so it was difficult to keep confidential the aims of the study for blinding procedure. Therefore, single blind method was used in this study.
- The data was collected only from Jahangirnagar University.

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Appendix A

Permission letter

Date: December 13, 2018

Head

Department of Computer science and Engineering

Jahangirnagar University,

Savar, Dhaka-1343

Through: Head of Physiotherapy Department, BHPI, CRP, Savar, Dhaka.

Subject: Prayer for permission for data collection to conduct my research project.

Dear Sir,

With due respect and humble submission I am Rabeya Akhter Shorna, student of 4th professional B.Sc in physiotherapy at Bangladesh Health Professions Institute (BHPI). The ethical board of BHPI has approved my research project title on "Impact of mechanical neck pain on activities of daily living for computer users" under the supervision of Ehsanur Rahman, Assistant Professor, Department of Physiotherapy, BHPI,CRP. Conducting this research project is a partial requirement for the degree of B.Sc in Physiotherapy. For that, I want to collect data for my research project at Computer Science and Engineering Department of Jahangirnagar University. So, I need permission for data collection from computer science and engineering department of Jahangirnagar University, Savar. I would like to assure that anything of my study will not be harmful for the participants.

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.

Sincerely Yours,

Rabeya Akhter Shorna

Rabeya Akhter Shorna

4th Professional B.Sc in Physiotherapy

Class roll:09, Session: 2013-2014

Bangladesh Health Professions Institute(BHPI)

CRP,Savar,Dhaka-1343

Recommended
12/12/18
Prof. Dr. Md. Imdadul Islam
Chairman
Dept. of Computer Science & Engineering
Jahangirnagar University
Savar, Dhaka-1343, Bangladesh.

Recommended
13.12.18
Prof. Md. Obaidul Haque
Head, Department of Physiotherapy
BHPI, CRP, Savar, Dhaka-1343

Appendix B

Consent form (English)

Assalamualaikum\Namashker, I am Rabeya Akhter Shorna, a student of 4th year B Sc. in Physiotherapy student of Bangladesh Health Professions Institute (BHPI) under Faculty of Medicine in University of Dhaka. To obtain my Bachelor degree, I shall have to conduct a thesis and it is a part of my study. The participants are requested to participate in the study after reading the following.

My thesis title is “Impact of mechanical neck pain on activities of daily living for computer users”. Through this study I will find the of neck pain, on daily living. If I can complete this thesis successfully, patient may get the benefits who have been suffering from this condition and it will be an evidence based treatment.

To fulfill my research project, I need to collect data. So, you can be a respected participant of my research and I would like to request you as a subject of my study. I want to meet you a couple of session at the time of your break time.

I would like to inform you that this is a purely academic study and will not be used for any other purpose. I assure that all data will be kept confidential. Your participation will be voluntary. You have the right to withdraw consent and discontinue participation at any time of the experiment.

If you have any query about the study , you may contact with me or my supervisor Ehsanur Rahman, Assistant professor, Department of Physiotherapy, BHPI, CRP,Savar,Dhaka-1343.

Do you have any question before I start?

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

Yes

No

Signature of the participant &

Date.....

Signature of the witness &

Date.....

Signature of the researcher &

Date.....

Appendix C

সম্মতিপত্র

আসসালামু আলাইকুম/নমস্কার,
আমি রাবেয়া আক্তার স্বর্ণা, ঢাকা বিশ্ববিদ্যালয়ের চিকিৎসা অনুশদেব অধিভুক্ত বাংলাদেশ
হেলথ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই) এর বি.এস.সি ইন ফিজিওথেরাপি বিভাগের
চতুর্থ বর্ষের শিক্ষার্থী। অধ্যয়নের অংশ হিসেবে আমাকে একটি গবেষণা সম্পাদন করতে হবে
এবং এটি আমার প্রাতিষ্ঠানিক কাজের একটা অংশ। নিম্নোক্ত ভাষাটি পাঠ করার পর
অংশগ্রহনকারীদের অধ্যয়নে অংশগ্রহন করার জন্য অনুরোধ করা হলো।

আমার গবেষণা শিরোনাম “কম্পিউটার ব্যবহারকারীদের দৈনন্দিন জীবনযাত্রার
ক্রিয়াকলাপের উপর ঘাড় ব্যথার প্রভাব”। এই গবেষণার মাধ্যমে আমি “দৈনন্দিন
জীবনযাত্রায় ঘাড় ব্যথা চিকিৎসার কার্যকারিতা খুঁজে বের করার চেষ্টা করবো। আমি যদি
আমার গবেষণাটি সার্থকভাবে সম্পূর্ণ করতে পারি তবে যেসব রোগীরা ঘাড়ের ব্যথায়
ভুগছেন তারা উপকৃত হবেন এবং এটি হবে একটি পরীক্ষামূলক প্রমাণ। আমার গবেষণা প্রকল্প
বাস্তবায়ন করার জন্য, আমি রোগীদের কাছ থেকে কিছু তথ্য সংগ্রহ করবো। সুতরাং,
আপনি আমার গবেষণার একজন সম্মানিত অংশগ্রহনকারী হতে পারেন এবং আপনাকে
আমার গবেষণার একজন অংশগ্রহনকারী হওয়ার জন্য অনুরোধ করছি। এজন্য আমি
আপনার সাথে বেশ কয়েকবার দেখা করবো। এই গবেষণার প্রদত্ত চিকিৎসা সমূহ ব্যাখ্যামুক্ত
এবং ঝুঁকিমুক্ত হবে। আমি আপনাকে জানাতে চাই যে, ইহা একটি সম্পূর্ণরূপে প্রাতিষ্ঠানিক
গবেষণা এবং অন্য কোনো উদ্দেশ্যে ব্যবহৃত হবে না। আমি নিশ্চিত করছি সকল উপাত্তসমূহ
গোপনীয় রাখা হবে। আপনার অংশগ্রহণ হবে সম্পূর্ণ ঐচ্ছিক, আপনি যেকোনো সময়ে নিজেকে
এ গবেষণা থেকে প্রত্যাহার করতে পারেন। গবেষণা সম্পর্কে আপনার যদি কোনো জিজ্ঞাসা
থাকে তবে আপনি আমার সাথে অথবা আমার সুপারভাইজার এহসানুর রহমান, সহকারী
অধ্যাপক, বি এইচ পি আই, সি আর পি, সাভার, ঢাকা-১৩৪৩ এর সাথে যোগাযোগ করতে
পারেন।

আমি শুরু করার আগে আপনার কোন প্রশ্ন আছে?

আমি কি শুরু করতে পারি?

হ্যাঁ

না

অংশগ্রহনকারীর স্বাক্ষর ও তারিখ.....

সাক্ষীর স্বাক্ষর ও তারিখ.....

গবেষকের স্বাক্ষর ও তারিখ.....

Appendix D

English questionnaire

This questionnaire has been designed to give us information as to how your neck pain has affected your ability to manage in everyday life. Please answer every section and mark in each section only the one box that applies to you . We realise you may consider that two or more statements in any one section relate to you, but please just mark the box that most closely describes your problem

Question	Response
Part- I: Socio – demographic Information	
1. Patient's name	
2. Sex	<input type="checkbox"/> Male <input type="checkbox"/> Female
3. Occupation
4. Educational year	<input type="checkbox"/> 1 st year <input type="checkbox"/> 2 nd year <input type="checkbox"/> 3 rd year <input type="checkbox"/> 4 th year
5. Patients Id
6. Mobile no	
7. Address
8. Patients age
9. Height
10. Weight

Part- 2: Patient rated pain in general:	
11. How much pain do you feel in general at resting position?	
12. How much do you feel in during working ?	

Part 3: Disability Information (This questionnaire has been designed to give us information as to how your neck pain has affected your ability to manage in everyday life). Each section of Neck Disability Index (NDI) consists of lowest 0 point and highest 5 points. Total Score= 50 (Obtained Score.....)	
13. How much pain do you have today?	<input type="checkbox"/> I have no pain at the moment <input type="checkbox"/> The pain is very mild at the moment <input type="checkbox"/> The pain is moderate at the moment <input type="checkbox"/> The pain is fairly severe at the moment <input type="checkbox"/> The pain is very severe at the moment <input type="checkbox"/> The pain is the worst imaginable at the moment
14. How independent are you at personal care (washing, dressing etc)	<input type="checkbox"/> I can look after myself normally without causing extra pain <input type="checkbox"/> I can look after myself normally but it causes extra pain <input type="checkbox"/> It is painful to look after myself and I am slow and careful <input type="checkbox"/> I need some help but can manage most of my personal care <input type="checkbox"/> I need help every day in most aspects of self-care <input type="checkbox"/> I do not get dressed, I wash with difficulty and stay in bed

Question	Response
15. How independent are you during lifting object?	<input type="checkbox"/> I can lift heavy weights without extra pain <input type="checkbox"/> I can lift heavy weights but it gives extra pain <input type="checkbox"/> Pain prevents me lifting heavy weights off the floor, but I can manage if they are conveniently placed, for example on a table <input type="checkbox"/> Pain prevents me from lifting heavy weights but I can manage light to medium weights if they are conveniently positioned <input type="checkbox"/> I can only lift very light weights
16. How do you feel while reading newspaper or books?	<input type="checkbox"/> I can read as much as I want to with no pain in my neck <input type="checkbox"/> I can read as much as I want to with slight pain in my neck <input type="checkbox"/> I can read as much as I want with moderate pain in my neck <input type="checkbox"/> I can't read as much as I want because of moderate pain in my neck <input type="checkbox"/> I can hardly read at all because of severe pain in my neck <input type="checkbox"/> I cannot read at all
17. To which state of headache do you feel?	<input type="checkbox"/> I have no headaches at all <input type="checkbox"/> I have slight headaches, which come infrequently <input type="checkbox"/> I have moderate headaches, which come infrequently <input type="checkbox"/> I have moderate headaches, which come frequently <input type="checkbox"/> I have severe headaches, which come frequently <input type="checkbox"/> I have headaches almost all the time
18. To which level of concentration do you keep during working despite of neck pain?	<input type="checkbox"/> I can concentrate fully when I want to with no difficulty <input type="checkbox"/> I can concentrate fully when I want to with slight difficulty <input type="checkbox"/> I have a fair degree of difficulty in concentrating when I want to <input type="checkbox"/> I have a lot of difficulty in concentrating when I want to <input type="checkbox"/> I have a great deal of difficulty in concentrating when I want to <input type="checkbox"/> I cannot concentrate at all

Question	Response
19. To which state neck pain affect your daily work?	<input type="checkbox"/> I can do as much work as I want to <input type="checkbox"/> I can only do my usual work, but no more <input type="checkbox"/> I can do most of my usual work, but no more <input type="checkbox"/> I cannot do my usual work <input type="checkbox"/> I can hardly do any work at all <input type="checkbox"/> I can't do any work at all
20. How do you feel your neck pain during travelling?	<input type="checkbox"/> I can travel without any neck pain <input type="checkbox"/> I can travel as long as I want with slight pain in my neck <input type="checkbox"/> I can travel as long as I want with moderate pain in my neck <input type="checkbox"/> I can't travel as long as I want because of moderate pain in my neck <input type="checkbox"/> I can hardly travel at all because of severe pain in my neck <input type="checkbox"/> I can't travel at all
21. To which state neck pain affect your sleep?	<input type="checkbox"/> I have no trouble sleeping <input type="checkbox"/> My sleep is slightly disturbed (less than 1 hr sleepless) <input type="checkbox"/> My sleep is mildly disturbed (1-2 hrs sleepless) <input type="checkbox"/> My sleep is moderately disturbed (2-3 hrs sleepless) <input type="checkbox"/> My sleep is greatly disturbed (3-5 hrs sleepless) <input type="checkbox"/> My sleep is completely disturbed (5-7 hrs sleepless)
22. To which state your neck pain affect your recreational activities?	<input type="checkbox"/> I am able to engage in all my recreation activities with no neck pain at all <input type="checkbox"/> I am able to engage in all my recreation activities, with some pain in my neck <input type="checkbox"/> I am able to engage in most, but not all of my usual recreation activities because of pain in my neck <input type="checkbox"/> I am able to engage in a few of my recreation activities because of pain in my neck <input type="checkbox"/> I can hardly do any recreation activities because of pain in my neck <input type="checkbox"/> I can't do any recreation activities at all

Appendix F

প্রশ্নাবলী (বাংলা)

এই প্রশ্নগুলো সাজানো হয়েছে আপনার সক্ষমতা সম্পর্কে, নেক পেইন বা আপনার দৈনন্দিন কাজে বাধাগ্রস্ত করে। দয়া করে সকল পর্বের উত্তর দিন এবং মার্ক করুন। আমরা জানি যে, দুই বা তিনটি বিবরণ আপনার সাথে মিলে যেতে পারে, যদি না মিলে তাহলে যেটি আপনার সমস্যার কাছাকাছি উত্তর হবে সেটি মার্ক করুন।

পর্ব ১ - সামাজিক বৈষয়িক তথ্যাবলি

প্রশ্নসমূহ	উত্তর
১। রোগীর নাম	
২। রোগীর আইডি	
৩। মোবাইল নং	
৪। ঠিকানা	
৫। রোগীর বয়সবছর
৬। লিঙ্গ	<input type="radio"/> পুরুষ <input type="radio"/> মহিলা
৭। পেশা	
৮। শিক্ষাবর্ষ	<input type="radio"/> প্রথম বর্ষ <input type="radio"/> দ্বিতীয় বর্ষ <input type="radio"/> তৃতীয় বর্ষ <input type="radio"/> চতুর্থ বর্ষ
৯। উচ্চতামিটার
১০। ওজনকেজি

পর্ব ২ - সাময়িকভাবে রোগী কর্তৃক নির্ধারিত ব্যাধার হার (ডান ফেল)

প্রশ্নসমূহ	উত্তর
১১। নিম্নোক্ত অবস্থায় আপনি কি পরিমাণ ব্যাধা অনুভব করেন?	<input type="radio"/> ০ <input type="radio"/> ১ <input type="radio"/> ২ <input type="radio"/> ৩ <input type="radio"/> ৪ <input type="radio"/> ৫ <input type="radio"/> ৬ <input type="radio"/> ৭ <input type="radio"/> ৮ <input type="radio"/> ৯ <input type="radio"/> ১০
১২। কর্মরত অবস্থায় আপনি কি পরিমাণ ব্যাধা অনুভব করেন?	<input type="radio"/> ০ <input type="radio"/> ১ <input type="radio"/> ২ <input type="radio"/> ৩ <input type="radio"/> ৪ <input type="radio"/> ৫ <input type="radio"/> ৬ <input type="radio"/> ৭ <input type="radio"/> ৮ <input type="radio"/> ৯ <input type="radio"/> ১০

পর্ব ৩ - ঘাড়ের অক্ষমতা সম্পর্কিত তথ্যাবলি (এই প্রশ্নাবলী তৈরী করা হয়েছে যাতে আমি জানতে পারি যে আপনার ঘাড়ের সমস্যা আপনার প্রতিদিনের কাজকে কি পরিমাণ বাধাগ্রস্ত করে) নেক ডিসএবিগিটি ইনডেক্স এর প্রতিটি অংশের সর্বনিম্ন নম্বর ০ এবং সর্বোচ্চ নম্বর ৫। মোট নম্বর = ৫০। অর্ধ নম্বর = (.....)

প্রশ্নসমূহ	উত্তর
১৩। আজকে আপনার ব্যাধার উন্নতি কি পরিমাণ?	<input type="radio"/> আমার এই মুহুর্তে কোন ব্যাধা নেই <input type="radio"/> আমার এই মুহুর্তে হালকা ব্যাধা আছে <input type="radio"/> আমার এই মুহুর্তে মাঝারি ব্যাধা আছে <input type="radio"/> আমার এই মুহুর্তে ব্যাধা মোটামুটি তীব্র <input type="radio"/> আমার এই মুহুর্তে ব্যাধা খুবই তীব্র <input type="radio"/> আমার এই মুহুর্তে ব্যাধা অকল্পনীয় খাবার

<p>১৪। ব্যক্তিগত বস্ত্রে (পরিচ্ছন্নতা, জামাকাপড় পরিধান ইত্যাদি) আপনি কি পরিমাণ ব্যবলম্বী?</p>	<ul style="list-style-type: none"> ○ আমি সাধারণত ব্যাধি সৃষ্টি ছাড়াই নিজের বস্ত্র নিতে পারি ○ আমি সাধারণত নিজের বস্ত্র নিতে পারি কিন্তু এতে অতিরিক্ত ব্যাধি হয় ○ আমার নিজের বস্ত্র নেওয়া অনেক যত্নসাপেক্ষ কিন্তু আমি এতে ধীরে ধীরে একে সতর্কতা অবলম্বন করি। ○ আমাকে সামান্য সাহায্য করলে আমি আমার ব্যক্তিগত বস্ত্রের অবিকলবেশে কাজই করতে পারি। ○ আমার নিজের বস্ত্রের অবিকলবেশে ক্ষেত্রে প্রতিদিনই সাহায্যের প্রয়োজন হয় ○ আমি জানা পড়তে পারি না, আমার জানা বোঁত করতে অসুবিধা হয় এবং বিছানার ওয়ে থাকতে হয়।
<p>১৫। কোন বস্তু উঠানোর ক্ষেত্রে আপনি কি পরিমাণ ব্যবলম্বী?</p>	<ul style="list-style-type: none"> ○ আমি ব্যাধি ছাড়াই ভারী জিনিস তুলতে পারি ○ আমি ভারী জিনিস তুলতে পারি কিন্তু তা অতিরিক্ত ব্যাধি দেয় ○ আমি ব্যাধির জন্য সেফে থেকে ভারী জিনিস তুলতে পারি না কিন্তু সুবিধামত কোথায় স্থাপন করা থাকলে আমি তা তুলতে পারি। উদাহরণস্বরূপ- কোন একটি টেবিলের উপর থেকে ○ আমি ব্যাধির জন্য সেফে থেকে ভারী জিনিস তুলতে পারি না কিন্তু আমি মাঝারী থেকে হালকা ওজন তুলতে পারি যদি সেটা সুবিধামত কোথাও স্থাপন করা থাকে ○ আমি অধুনার হালকা ওজন তুলতে পারি ○ আমি কোন কিছুই তুলতে বা বহন করতে পারি না
<p>১৬। যেকোন বস্তু তুলতে বা বহন করার সময় আপনি কি রকম ব্যাধি অনুভব করেন?</p>	<ul style="list-style-type: none"> ○ আমি আমার ঝড়ে ব্যাধি ছাড়াই ইচ্ছামত পড়তে পারি ○ আমি আমার ঝড়ে সামান্য ব্যাধি নিয়ে যতটা আমি চাই পড়তে পারি ○ আমি আমার ঝড়ে সহনীয় ব্যাধি নিয়ে যতটা আমি চাই পড়তে পারি ○ আমি আমার ঝড়ে মাঝারি ব্যাধির জন্য আমি যতটা চাই পড়তে পারি না ○ আমি আমার ঝড়ে তীব্র ব্যাধির কারণে খুব কমই পড়তে পারি ○ আমি আমার ঝড়ে ব্যাধির কারণে একদমই পড়তে পারি না
<p>১৭। আপনি ঝড়ে ব্যাধির জন্য কি পরিমাণ মাথা ব্যাধি অনুভব করেন?</p>	<ul style="list-style-type: none"> ○ আমার কোন মাথা ব্যাধি নেই ○ আমার হালকা মাথা ব্যাধি আছে যা কমাটিং হয় ○ আমার মাঝারি মাথা ব্যাধি আছে যা কমাটিং হয় ○ আমার মাঝারি মাথা ব্যাধি আছে যা ঘনঘন হয় ○ আমার তীব্র মাথা ব্যাধি আছে যা ঘনঘন হয় ○ আমার সবচেয়ে মাথাব্যাধি হয়
<p>১৮। ঝড়ে ব্যাধি ছাড়া আপনি কালজে কি পরিমাণ মনোযোগ দিতে পারেন?</p>	<ul style="list-style-type: none"> ○ অত্রি কোন অসুবিধা ছাড়াই সম্পূর্ণ মনোযোগ দিতে পারি ○ আমি সামান্য অসুবিধার সঙ্গে যখন চাই তখনই আমি সম্পূর্ণ মনোযোগ দিতে পারি ○ আমি যখন মনোযোগ দিতে চাই, আমার মনোযোগ দিতে হালকা সমস্যা হয় ○ আমার মনোযোগ দিতে অনেক অসুবিধা হয় ○ আমার মনোযোগ দিতে গুরুতর অসুবিধা হয় ○ আমি একদমই মনোযোগ দিতে পারি না

<p>১৯। ঘাড়ে ব্যাথা আপনার প্রতিদিনের কাজকে কি পরিমাণ প্রভাবিত করে?</p>	<ul style="list-style-type: none"> ○ আমি যে কাজ করতে চাই তা করতে পারি ○ আমি শুধুমাত্র আমার যান্ত্রিক কাজ করতে পারি কিন্তু এর বেশি না ○ আমি আমার অধিকাংশ যান্ত্রিক কাজ করতে পারি কিন্তু এর বেশি না ○ আমি আমার যান্ত্রিক কাজ করতে পারি না ○ আমি খুব কমই কোন কাজ করতে পারি ○ আমি একদমই কোন কাজ করতে পারি না
<p>২০। গাড়িতে সন্ধ্যার সময় আপনার ঘাড়ে কি পরিমাণ ব্যাথা অনুভূত হয়?</p>	<ul style="list-style-type: none"> ○ আমি ঘাড়ে ব্যাথা ছাড়াই গাড়িতে ভ্রমণ করতে পারি ○ আমি আমার ঘাড়ে সামান্য ব্যাথা নিয়ে যতক্ষণ দীর্ঘ খুঁশি ততক্ষণ ভ্রমণ করতে পারি ○ আমি আমার ঘাড়ে স্তরীয় ব্যাথা নিয়ে যতক্ষণ দীর্ঘ খুঁশি ততক্ষণ ভ্রমণ করতে পারি ○ আমি আমার ঘাড়ে মাঝারি ব্যাথা নিয়ে যতক্ষণ দীর্ঘ খুঁশি ততক্ষণ ভ্রমণ করতে পারি ○ আমি আমার ঘাড়ে তীব্র ব্যাথার কারণে খুব অল্প ভ্রমণ করতে পারি ○ আমি একদমই ভ্রমণ করতে পারি না
<p>২১। ঘুমানোর সময় ঘাড়ে ব্যাথা আপনার ঘুমকে কি পরিমাণ প্রভাবিত করে?</p>	<ul style="list-style-type: none"> ○ আমার ঘুমাতে কোন সমস্যা হয় না ○ আমার ঘুমাতে সামান্য সমস্যা হয় (১ঘণ্টার কম সময় নিশুঁম কাটে) ○ আমার ঘুমাতে সমস্যা হয় (১-২ ঘণ্টা নিশুঁম কাটে) ○ আমার ঘুমের মাঝারি বিঘ্ন হয় (২-৩ ঘণ্টা নিশুঁম কাটে) ○ আমার ঘুমের ব্যাপকভাবে বিঘ্ন হয় (৩-৫ ঘণ্টা নিশুঁম কাটে) ○ আমার ঘুম সম্পর্কভাবে বিঘ্ন হয় (৫-৭ ঘণ্টা নিশুঁম কাটে)
<p>২২। ঘাড়ে ব্যাথা আপনার চিকিৎসানোদনের কার্যক্রমকে কি পরিমাণ প্রভাবিত করে?</p>	<ul style="list-style-type: none"> ○ আমি ঘাড়ে ব্যাথা ছাড়াই সব চিকিৎসানোদন কার্যক্রমে অংশগ্রহণ করতে পারি ○ আমি আমার ঘাড়ে হালকা ব্যাথা নিয়ে সব চিকিৎসানোদন কার্যক্রমে অংশগ্রহণ করতে পারি ○ আমি আমার ঘাড়ে ব্যাথার কারণে সর্ব চিকিৎসানোদনে অংশগ্রহণ করতে না পারলেও অধিকাংশ চিকিৎসানোদন কার্যক্রমে অংশগ্রহণ করতে পারি। ○ আমি আমার ঘাড়ে ব্যাথার কারণে মাঝারি চিকিৎসানোদন কার্যক্রম করতে পারি। ○ আমি আমার ঘাড়ে ব্যাথার কারণে অল্প চিকিৎসানোদন কার্যক্রম করতে পারি। ○ আমি আমার ঘাড়ে ব্যাথার কারণে একদমই চিকিৎসানোদন কার্যক্রম করতে পারি না।

End