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

**PAIN AND DISABILITY OF SHOULDER AMONG COMPUTER USER**

Submitted by **Masum Rana,** for the partial fulfilment of the requirement for the degree of Bachelor of Science in Physiotherapy (B.Sc. PT).

……..
**Abid Hasan Khan**
Lecturer
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.
Supervisor

……
**Md. Shahidul Islam**
Assistant Professor & Course Coordinator
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

……
**Zahid Bin Sultan Nahid**
Assistant Professor
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

…….
**Dr. Zakia Rahman**
Lecturer
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka.

…….
**Md. Furatul Haque**
Lecturer
Department of Physiotherapy
SCMST, Mirpur-14, Dhaka

…….
**Dr. Abul Kasem Mohammad Enamul Haque**
Principal
Saic College of Medical Science and Technology
SCMST, Mirpur-14, Dhaka.

## DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy.

I confirm that if anything identified in my work that I have done plagiarism or any form of cheating that will directly awarded me fail and I am subject to disciplinary actions of authority. I confirm that the electronic copy is identical to the bound copy of the Thesis.

In case of dissemination the finding of this project for future publication, research supervisor will highly concern, it will be duly acknowledged as graduate thesis and consent will consent taken from the physiotherapy department of Saic College of Medical Science and Technology (SCMST).

**Signature:** **Date:**

**Masum Rana**
Bachelor of Science in Physiotherapy (B.Sc. PT)
DU Roll no: 1257
Reg.no: 7474
Session: 2016-2017

## CONTENTS

# Acknowledgement

First of all, I would like to pay my gratitude to **Almighty Allah** who has given me the ability to complete this project in time with success. The second acknowledgement must go to my parents, my younger sister who have always inspired me for preparing the project properly. I am extremely grateful to my honorable and praiseworthy Supervisor **Abid Hasan Khan**, Lecturer, Department of Physiotherapy, Saic College of Medical Science and Technology (SCMST) for giving me his valuable time, his keen supervision and excellent guidance without which I could not be able to complete this project.

I am also very thankful to **Dr. Abul Kasem Mohammad Enamul Haque**, Principal, SCMST; **Md. Shahidul Islam**, Assistant Professor & Course Coordinator, Department of Physiotherapy, SCMST; **Zahid Bin Sultan Nahid**, Assistant Professor, Department of Physiotherapy, SCMST; **Dr. Zakia Rahma,** Lecturer, Department of Physiotherapy, Saic College of Medical Science and Technology (SCMST), **Md. Furatul Haque**, Lecturer, Department of Physiotherapy and also all of my respected teachers for helping me in this study.

I wish to thanks to all respectable Physiotherapy staff working at Saic Physiotherapy Outdoor Department for helping me in collection of my data.

I am grateful to the intern physiotherapists, Department of Physiotherapy, SCMST, Mirpur-14, Dhaka for their support throughout the period of this study. I wish to thank the Librarian of SCMST and his associates for their kind support to find out related books, journals and also access to internet.

Finally, I would like to thanks all the participants who willingly participated as the study population during the conduction of my study and the entire individual who were directly or indirectly involved with this study.

# Acronyms

| | |
|---|---|
| SSC: | Secondary school certificate |
| HSC: | Higher Secondary School Certificate |
| SPADI | Shoulder pain and disability index |
| SCMST: | Saic College of Medical Science and Technology |
| WHO: | World Health Organization |

# List of Tables

# List of Figures

## Abstract

*Purpose:* 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 computerrelated activities can cause Neck Pain in the young. Neck symptoms have been associated with low or high screen position,. *Objectives*: So, the objective this research was carried out to assess the pain and disability of shoulder among computer user. *Methodology:* The prospective quantitative research was carried out to accomplish the objective of the study. 112 participants among people in different part t were selected as simple random sampling technique. The investigator used a mix of both structured and semi-structured questionnaire and participants were requested to give opinion based on the structure of the question. Data were numerically coded and put in both Excel and SPSS 25 version software program. Descriptive statistics was performed to obtain the result of the study. *Results:* This study's participant means and standard deviation of participant age where are Mean± SD= 1.57±.654; here 22-43 years 51.8%, 43-63 years 39.3% and >63 years 8.9% of the participant. In this study pain score was 32.29%, Disability score was 26.14% and total Spadi score was 14.00%. The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and Participant know about stroke. *Conclusion:* 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



*Key words: Pain and disability, Computer user*

# CHAPTER –I: INTRODUCTION

## 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, suprascapular, 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 4 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 Ariens 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).

## 1.2Justification

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).

## 1.3. Research Question

What is the pain and disability of shoulder among the computer users?

## 1.4Objectives

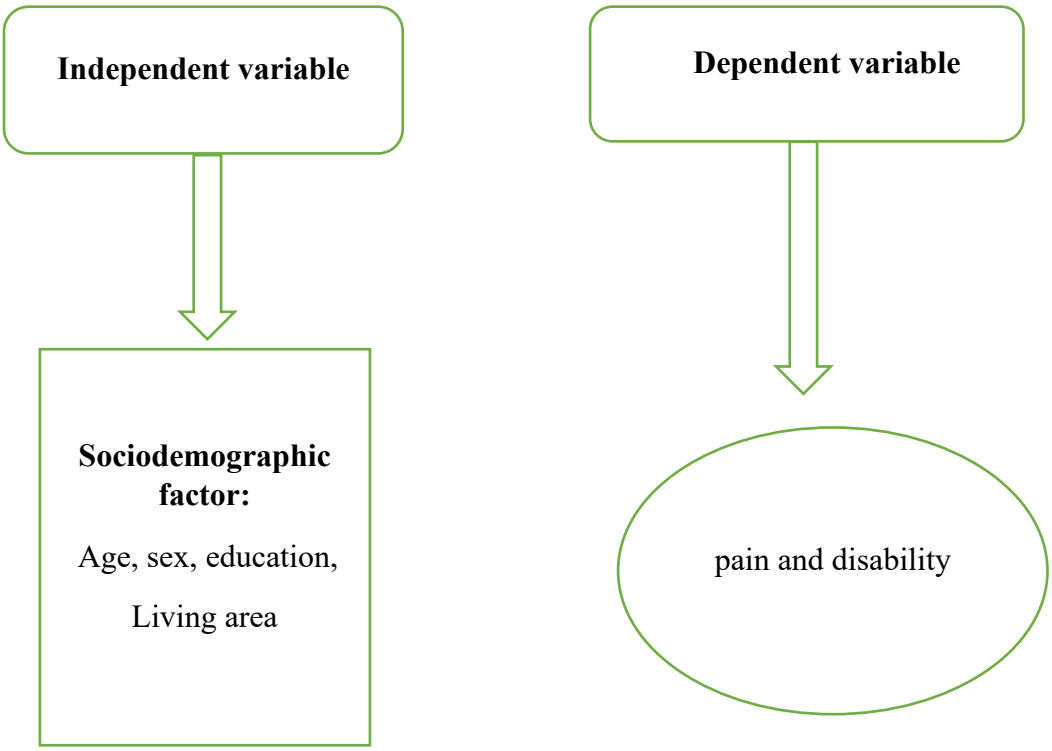
### 1.4.1 General objective

- To assess the level of pain and disability of shoulder among the computer users in Dhaka city

### 1.4.2 Specific Objectives

- To know the prevalence of pain and disability of shoulder among thecomputer users in Dhaka city
- To evaluate the level pain and disability among the computer users in Dhaka by SPADI
- To evaluate the severity of pain by using shoulder pain and disability scale
- To determine the association between socio-demographic with pain and disability.

## 1.5Conceptual Framework



## 1.6 Operational Definitional:

**Shoulder joint:** The glenohumeral joint is a ball and socket joint that includes a complex, dynamic, articulation between the glenoid of the scapula and the proximal humerus. Specifically, it is the head of the humerus that contacts the glenoid cavity (or fossa) of the scapula. The articulating surfaces of both have a lining of articular cartilage. The glenoid cavity is a shallow osseous element that is structurally deepened by a fibrocartilagenous rim, the glenoid labrum, that spans the osseous periphery of the vault. The labrum is continuous with the tendon of the biceps brachii at its superior aspect.

**Pain:** Pain is an unpleasant sensory and emotional experience associated with, or resembling that associated with, actual or potential tissue damage. Pain is always a personal experience that is influenced to varying degrees by biological, psychological and social factors. Although pain usually serves an adaptive role, it may have adverse effects on function and on social and psychological well-being. Verbal description is only one of several behaviors to express pain, as the inability to communicate does not negate the possibility that a human or a nonhuman animal experiences pain.

**Disability:** A disability is any condition of the body or mind (impairment) that makes it more difficult for the person with the condition to do certain activities (activity limitation) and interact with the world around them (participation restrictions). Although "people with disabilities" sometimes refers to a single population, this is actually a diverse group of people with a wide range of needs. Two people with the same type of disability can be affected in very different ways. Some disabilities may be hidden or not easy to see.

**Socio-demographic**: Socio-demographic variables include, for example, age, sex, education, migration background and ethnicity, religious affiliation, marital status, household, employment, and income. Different index variables are formed on the basis of socio-demographic variables. They include, for example, socio-economic status, which combines information on education and income. Socio-demographic details are often used to describe realised samples and to determine sampling error.

**Shoulder pain and disability index (spadi):** The Shoulder Pain and Disability Index (SPADI) was developed to measure current shoulder pain and disability in an outpatient setting. The SPADI contains 13 items that assess two domains; a 5-item subscale that measures pain and an 8-item subscale that measures disability. There are two versions

of the SPADI; the original version has each item scored on a visual analogue scale (VAS) and a second version has items scored on a numerical rating scale (NRS). The latter version was developed to make the tool easier to administer and score (Williams et al 1995). Both versions take less than five minutes to complete (Beaton et al 1996, Williams et al 1995). The questionnaire was developed and initially tested in a mixed diagnosis group of male patients presenting to ambulatory care reporting shoulder pain (Roach et al 1991).

# CHAPTER- II LITERATURE REVIEW

A complicated joint with a large range of motion and several functional requirements is the shoulder. In order to correctly recognize and diagnose shoulder disease, one must have a thorough awareness of the complex network of skeletal, ligamentous, muscular, and neurovascular anatomy. Numerous articulations, distinctive structural elements, and anatomical linkages all contribute to shoulder function and, consequently, dysfunction and injury. The majority of a patient's evaluation for shoulder issues depends on a physical examination. The fundamental principles of examination, palpation, range of motion, strength, and neurovascular integrity must be adhered to, just as with any exam. Specific diagnostic techniques must be used to isolate and aid distinguish diseases due to the intricacy of the shoulder anatomy. Exam-based assessment of shoulder impingement, instability, or rotator cuff damage directs clinical decision-making and informs treatment choices (Bakhsh et al., 2018).

The scapula, which is the main bone component of the shoulder, is where all of the muscles come together. The glenoid cavity, or articular surface, of the glenohumeral joint, is located at the lateral side of the scapula. The glenoid labrum, shoulder joint capsule, supporting ligaments, and the myotendinous attachments of the rotator cuff muscles surround and support the glenoid cavity on both sides. In order to keep the shoulder joint stable, the shoulder muscles are essential. The rotator cuff muscles are the main set of muscles that support the shoulder joint. The supraspinatus, infraspinatus, teres minor, and subscapularis are the four rotator cuff muscles. The pectoralis major, minor, deltoids, trapezius, and serratus anterior are other muscles that make up the shoulder girdle (McCausland et al.,2018).

Pain is an unpleasant emotional state that is experienced in the mind but that can be linked to a specific body component. In other words, it is a personal experience. According to Wilde et al. (2007), the purpose of pain is to safeguard a wounded part from further harm. Any way you look at it, chronic pain is a major worldwide health issue. One in five adults throughout the world are said to experience pain. Acute, chronic, intermittent, or a combination of the three types of pain are all possible. Pain is a complex, elusive, and dynamic phenomena that is famously challenging to measure (Goldberg & McGee, 2011).

According to the researcher the prevalence of non-communicable diseases has been sharply increasing worldwide, particularly musculoskeletal disorders, which are one of the leading causes of morbidity globally. One of the prevalent musculoskeletal conditions that affects millions of workers worldwide in a variety of occupations or service sectors is neck pain. Compared to 27.7% who were single, 72.3% of them were married. About 44.2% of people between the ages of 18 and 29 report having neck pain. BMI-wise, 36% of obese people are more prone to experience neck pain (Mustafa & Sultan, 2013).

According to the researcher neck pain is any discomfort felt from the base of the skull at the level of the ear to the upper back or shoulder. General aches and pains, postural tiredness in the arms, shoulders, and neck, as well as ongoing soreness or discomfort in the soft tissues encircling the neck and shoulders, can all be signs of neck pain (Bhardwaj and Mahajan.2017).

Due to prolonged durations of sitting in one posture without any intervals to stretch the neck muscles, there is a strong link between neck pain and computer users. Teenagers' daily computer use of four to five hours has been linked to a higher risk of neck pain. A neck that is perfectly aligned will have a small lordotic curve. Long-term computer use, slumped shoulders, and poor neck posture all affect the neck's natural lordotic curve, which causes muscular imbalance and, ultimately, neck pain. Neck pain can be greatly reduced by maintaining good neck alignment. Neck discomfort was 99.2% common, and 65.8% of people with neck pain reported being disabled. Conclusion: Students who spend a lot of time on the computer often have neck pain. However, the prevalence of the resulting handicap is not extremely high. (Bhardwaj and Mahajan.2017).

Muscle, tendon, and nerve pain disorders are referred to as "work-related musculoskeletal disorders" (WMSDs). Examples of similar conditions include tension neck syndrome, thoracic outlet syndrome, tendinitis, and carpal tunnel syndrome. These disorders, which can be uncomfortable while working or at rest, are brought on by regular, repetitive labor tasks or tasks requiring abnormal postures (Das & Ghosh, 2010).

Among heavy computer users, the neck and shoulder pain (NSP) symptoms are particularly prevalent. This paper covers research publications from the past 20 years that have concentrated on the pathophysiology and various elements of computer-related neck and shoulder pain (NSPRCU). The condition typically has multiple

dimensions, including developed occupational, personal, and social components. There have been suggestions made regarding diagnostic techniques, preventative measures, and treatment choices. Further research on NSPRCU is required because the etiology of these illnesses is not yet fully understood (Ming et al., 2014).

According to the researcher, To assess present shoulder pain and impairment in an outpatient context, the Shoulder Pain and Disability Index (SPADI) was created. A 5-item subscale for measuring pain and an 8-item subscale for measuring disability make up the 13 items that make up the SPADI, which evaluates two domains. The SPADI is available in two forms, the first of which scores each item using a visual analogue scale (VAS), and the second of which uses a numerical rating scale (NRS). The latter version was created to make the tool simpler to score and administer. Both variants can be finished in under five minutes. The questionnaire was created and initially evaluated on a group of male patients with a variety of diagnoses who were seeking ambulatory care and complaining of shoulder pain. Since then, the SPADI has been used in primary care on patient populations with mixed diagnoses and surgery, including those with rotator cuff disease, osteoarthritis, and rheumatoid arthritis, adhesive capsulitis, joint replacement surgery, and in a significant population-based study of shoulder symptoms (Shoulder Pain and Disability Index., 2011).

The problems of the neck and shoulders brought on by prolonged and/or repetitive computer use are referred to as "neck and shoulder pain connected to computer use." Because there aren't many reliable clinical tests and diagnostic techniques for determining a precise diagnosis, the classification of NSP has been inconsistent. NSP typically results from functional problems. Neck and shoulder pain symptoms commonly combine, overlap, and cannot always be verified as tissue damage. NSP has been categorized in a variety of ways, each based on the location of the pain (cervicobrachialgia), the cause of the discomfort (work-related), how long it has lasted (acute or chronic), the findings of the condition's status (tension neck), radiological results (degenerative disc disease), or dysfunction of the cervical facet joints (hypo- or hypermobility). The current care recommendations for neck pain in Finland are based on the information gleaned from a clinical interview, symptoms, and clinical findings: Local neck discomfort, radiating neck pain, whiplash injury, myelopathy (spinal cord compression), and other neck aches associated to general illnesses, tumors, or condition following cervical spine fractures are among the five types of neck pain. The NSP associated with computer use is always chronic and work-

related. Our research has shown that NSPRCU can be divided into two categories: (1) local neck and shoulder disorders, such as non-specific NSP, cervical disc degeneration, nerve root compression, etc.; and (2) non-local neck and shoulder disorders, such as radiating NSP and computer-related dysfunctions of the median and ulnar nerves.

According to the researcher, There are 38 million adult migraine sufferers in the United States, and 91% of them are disabled as a result of their migraines. Most migraineurs address their headaches as soon as symptoms appear, with the first-line treatment for migraines traditionally being abortive and preventative drugs. However, almost 40% of those who suffer from episodic migraine lack access to necessary care. About half of these patients indicate moderate or severe headache-related disability, and one-third express dissatisfaction with their current medical care. Additionally, routinely administered rescue drugs (such as analgesics, ergots, triptans, and opioids) may raise the risk of dependence, headaches associated with excessive pharmaceutical usage, and allodynia (Rist et al., 2019).

The limits of existing pharmaceutical medications have brought attention to the need to investigate complementary or integrative migraine treatments. Spinal manipulation, a manual therapy technique most frequently employed by chiropractors but also occasionally used by some physical therapists and osteopathic doctors, is one viable non-pharmacological strategy for treating migraine patients. According to a recent cross-sectional study using data from the U.S. National Health Interview Survey, 15.4% of migraine sufferers sought chiropractic care in the previous 12 months, which includes spine manipulation. 6 Given how often migraines are substantial disease burden in chiropractic care clinics because 94% of spinal manipulation for which reimbursement is sought in the U.S. is delivered by chiropractors. For example, a survey of Australian chiropractors also found that 53% of chiropractors reported managing patients with migraine “often” and 40.9% of chiropractors reported managing patients with migraine “sometimes”.8 In the United States (Rist et al., 2019).

Only the rotator cuff injury under conservative therapy has been translated, culturally adapted, and validated in Greek for the SPADI. The participants had a rotator cuff tear that had been present for more than three months. They discovered that the Greek SPADI has good test-retest reliability, great internal consistency, and moderate to high construct validity to evaluate functional impairment in Greek patients with rotator cuff tears.

For all shoulder problems, there isn't yet a valid and trustworthy Greek version of the SPADI. Therefore, the current study's objective was to evaluate the SPADI's validity and reliability in people who had shoulder pain for at least four weeks. According to the authors, the Greek SPADI would be a reliable was carried out in conformity with the Helsinki Declaration.. The recommendations were followed to determine the sample size for the translation, cultural adaption, and validation of the Greek SPADI questionnaire. These recommendations state that 10 extra subjects should be used for every additional questionnaire item. 130 persons made up the sample size because the SPADI has 13 components (Spanou et al., 2018).

According to the researcher , The outcomes demonstrated that the Greek Shoulder Pain and Disability Index has strong concurrent validity ($r > 0.7$), test-retest reliability (ICC 140.926), and internal consistency (Cronbach a 14 0.947). The Greek SPADI total score's standard error of measurement (SEM) and smallest detectable change (SDC) were 4.77 and 13.18, respectively. Thirty-one participants (68 women and 62 men; mean age 44.5 years; SD 7.4; first visit shoulder discomfort) completed the Greek version of the SPADI. The study's participants had no trouble understanding the questionnaire, and it took them less than 10 minutes to do it on their own.

The questionnaire was fully completed by each participant, yielding the longest response period. 115 participants participated in the reliability research because 15 of them thought their symptoms had improved by the second visit. Their demographics, which included 60 women and 55 men, were the same as those of all participants.

Age was 44.9 (6.4) years on average, with a standard deviation of 6.4 years. Each patient represented a range of educational backgrounds. 20 patients (12 females ) (Spanou et al., 2018).

According to the researcher, For meta-analysis, reported results were combined whenever it was practical using the RevMan 5.1 program. According to previously published reviews (Clarke et al. 2011) and the CBRG, statistical pooling of the overall effect (random effects model) compared to a comparator treatment with a 95% confidence interval was utilized (Furlan et al. 2009). According to the chosen outcome measure, the results for each of the primary outcome measures (pain and disability) were combined. Where possible, data for meta-analyses were entered into RevMan 5.1 using the following parameters: mean difference for outcomes from baseline outcomes, standard deviation, 95% confidence intervals, and total participants. After that, the weighted mean difference was interpreted in light of the minimal detectable clinical

change ratings for pain that were suggested by the literature (NRS) (Rist et al., 2019).

In this essay, some provocations are put up for academics and researchers working on critical disability studies. We list a few of the analytical detours that have occurred in recent years that have raised a variety of questions and concerns. We start by defining Critical Disability Studies as an interdisciplinary area of research that builds on fundamental notions in the field of disability studies. Critical research in disability studies is being created at an exponential rate. We claim that a moment of reflection is necessary. To elicit thought and discussion, we present five provocations: what is the goal of critical disability studies; is it inclusive; is disability the target or topic of studies; what matters or is stated about disability; and how can we address disability and ability. We argue for politicized and reflexive critical disability studies in our conclusion (Goodley et al., 2019). According to the researcher, The SPADI's poor reproducibility was shown by its low intraclass correlation coefficient (ICC) of 0.66. In various patient populations, a more recent systematic review discovered reliability coefficients of ICC 0.89. (Roy et al 2009). Cronbach's alpha often exceeds 0.90, indicating a high level of internal consistency (Roy et al 2009, Hill et al 2011). The SPADI exhibits strong construct validity and correlates favorably with other shoulder-specific questions. It has been demonstrated to be adaptable to change over time, in a range of patient populations, and to be able to distinguish individuals with better and deteriorating illnesses with sufficient accuracy.

According to the researcher, For the SPADI, no significant floor or ceiling impacts have been found. The smallest observable change that is significant to the patient is 8 points, which has been considered to be the minimal clinically noteworthy difference. The least detectable change (MDC 95%) is 18 points when the SPADI is used more than once on the same subject, such as at the initial consultation and then at discharge. Therefore, using the instrument on the same patient more than once is discouraged. If the change score is less than this, measurement error may have occurred ( Shoulder Pain and Disability Index., 2011).

According to the researcher, Carrying weights on one shoulder was linked to an increased risk of shoulder pain and disability in men (relative risk (RR) 5-5, 95% confidence interval (95% CI) 1-8 to 17), whereas those who reported working with their hands raised above their shoulders, repeatedly using their wrists or arms, or bending down to reach below the knee had a risk of shoulder pain and disability that was about twice as high. Men who frequently worked in chilly or wet conditions had a four- and

six-fold increased risk of shoulder pain and impairment, respectively. Men and women who said their work produced a lot of stress also reported reporting shoulder discomfort and impairment more frequently (RR 19, 95% CI 09 to 4.1) (Pope et al.,2000).

The researcher said that, The 'z test' was used in the statistical analysis to establish the importance of scapular asymmetry. There is significant asymmetry at 45, 90, and 135 degrees of shoulder abduction, respectively, but not at 0 degrees of shoulder resting position (Sharma. 2021).

Due to prolonged durations of sitting in one posture without any intervals to stretch the neck muscles, there is a definite association between neck pain and computer users. Teenagers' daily computer use of four to five hours has been linked to a higher risk of neck pain. A neck that is perfectly aligned will have a small lordotic curve. Long-term computer use, slumped shoulders, and poor neck posture all affect the neck's natural lordotic curve, which causes muscular imbalance and, ultimately, neck pain. Neck pain can be prevented in large part by maintaining good neck position (Nadeem et al., 2017).

According to the researcher , The mean age of the sample was 37.087.14 years, and 72.0% of the teachers were men. 72% of participants who responded to the questionnaires indicated they knew little about ergonomics, and 68% claimed they did not implement these principles in their daily lives. Teachers were most at risk for ergonomic hazards due to extended sitting and standing, desks with sharp edges, the usage of touchpads on laptops, and insufficient monitor height. All instructors reported experiencing pain in the previous 12 months, with the low back (60%) and shoulders (56%) being the most frequently afflicted (Kraemer et al., 2020).

## CHAPTER - III METHODOLOGY

### 3.1 Study design

Descriptive type of cross-sectional study.

### 3.2 Site

This study was Miirpur, New Market, Azimpur and Uttura in Dhaka city.

### 2.3 Study period

The duration of the study was 1 years.

### 3.4 Sample size

n = $\frac{z^2pq}{d^2}$

Here,
Z = 1.96

P = Prevalence = 62.61%

=0.62 (Rajput et al., 2019)

q = 1-P

d = Confidential interval = 0.05

According to standard formula, sample size will be,

$\frac{z^2Pq}{d^2}$ = $[(1.96)^2 \times 0.6261 \times 0.3739] \div (0.05)^2 = 359$

So, the initial sample size is 359. But limitation of as this research, the feasible 112 samples were selected for this study.

### 3.5 Study population

The study population was consist of male and female in Dhaka city.

### 3.6 Sampling Technique

Sample was selected purposively to interview the study population considering the inclusion and exclusion criteria.

### 3.7 Data Collection Procedure

Data collection procedure was involve face to face interview of common people with help of interviewer administered structured questionnaire.

### 3.8 Data Analysis

The data were analyzed with the Microsoft Office Excel 2019 with SPSS 25 version software program.

### 3.9 Inclusion criteria

- Consists of in the in Dhaka city with the age of 20-85years.
- Both male and female patients would include

### 3.10 Exclusion criteria

- The subject who was not willing to participant in the study.
- Patients who would medically unstable.
- Participants who had not speaking problem.
- Patients who were not able to communicate.

### 3.11 Ethical consideration

The ethical review board of SCMST had if permitted the researcher then to collect data Verbal consent was taken from cerebral palsy patient`s mother or career.

### 3.12 Rigor

It was always aimed to avoid introducing personal viewpoints, values, and biases during the data collecting and processing. No judgements were made, and no leading questions were asked. When conducting the study, the researcher was taken help from the supervisor when needed. Researcher always tried not to influence the process by his own value and biases. No leading question were asked or no important question is avoided. The participant's information was coded accurately and checked by the research supervisor to eliminate any possible errors. The entire information was handled with confidentiality. In the result section researcher was not find influenced about outcome by showing any personal interpretation during conduct the study every section of the study is checked by the research supervisor.

# CHAPTER: IV RESULT

The study aimed to assess the level of pain and disability of shoulder among computer user in Dhaka city. The data was collected by the researcher himself. Structured questions were used with both open-ended and close-ended questions in the questionnaire. The data were analyzed with the Microsoft Office Excel 2019 with SPSS 25 version software program. In this study researcher use bar, Colum, Figure, Pie chart so show the result of the body. Because it is easier to make sense of a set of data.

## 4.1: Socio-demographic condition:

### 4.1.1: Age of participant

This study's participant means and standard deviation of participant age where are Mean ± SD= 1.57±.654; here 22-43 years 51.8%, 43-63 years 39.3% and >63 years 8.9% of the participant.

| Age Group | Percentage | Frequency | Mean | SD |
|---|---|---|---|---|
| 22-42 | 51.8 | 58 | 42.81 | 14.421 |
| 43-63 | 39.3 | 44 | | |
| >63 | 8.9 | 10 | | |
| Total | 100 | 112 | | |

Table-1: Age of participant

### 4.1.2 Sex of participant

In this study were only 100% male and not any female.

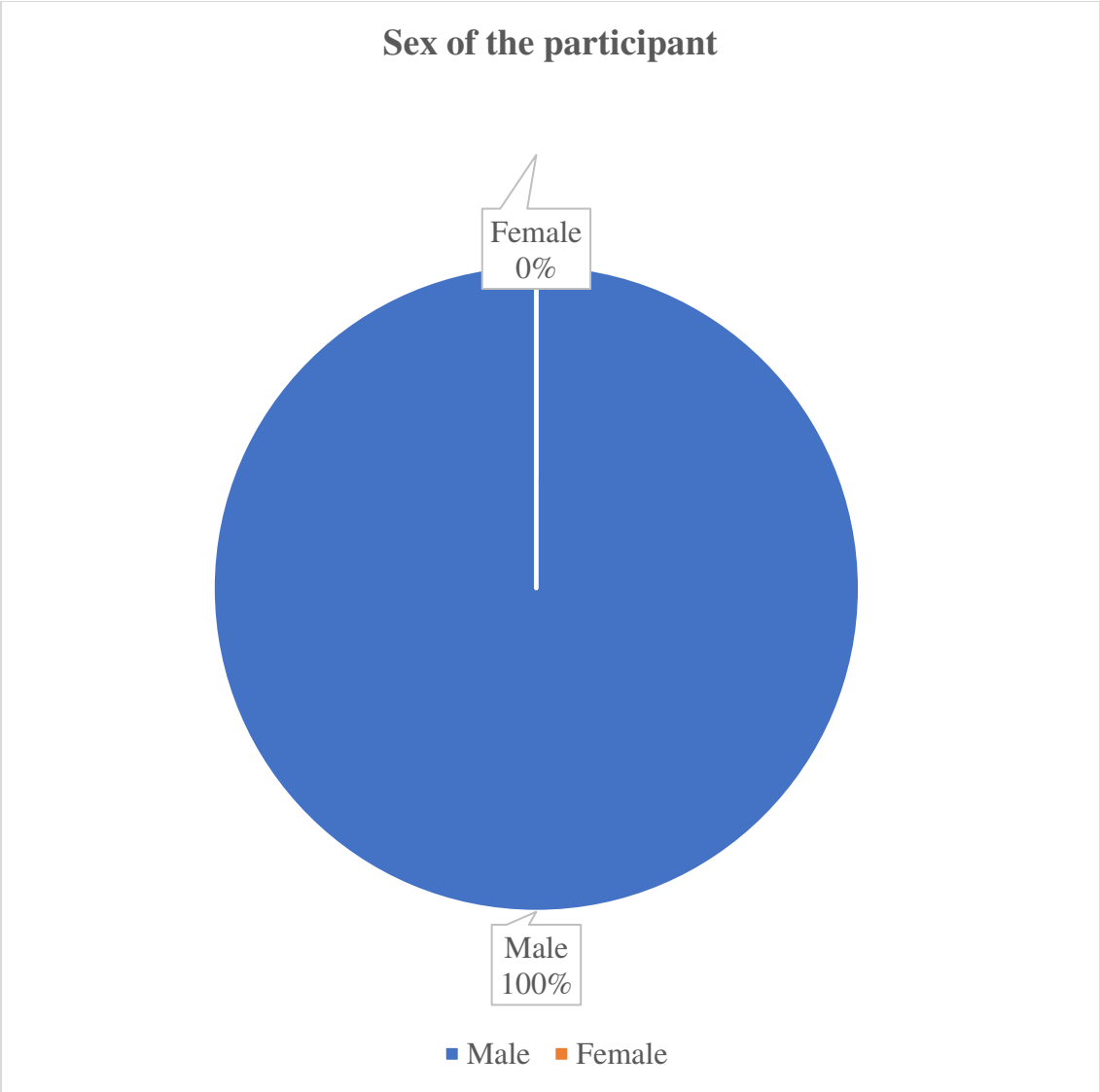



Figure-1: Sex of participant

### 4.1.3 Educational qualification of the participant

In this study 8.0% were SSC, 1.8%were HSC and 90.2% were others of the participant .

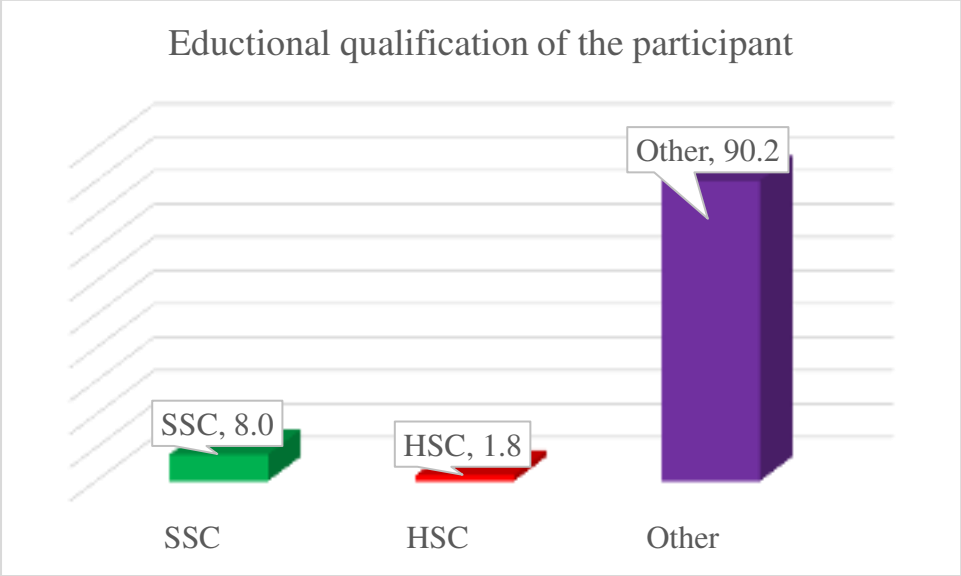



Figure- 2: Educational qualification of the participant

### 4.1.4 Living area of the participant

In this study 100% participant was living in urban.  And do not living rural and semi urban in this study

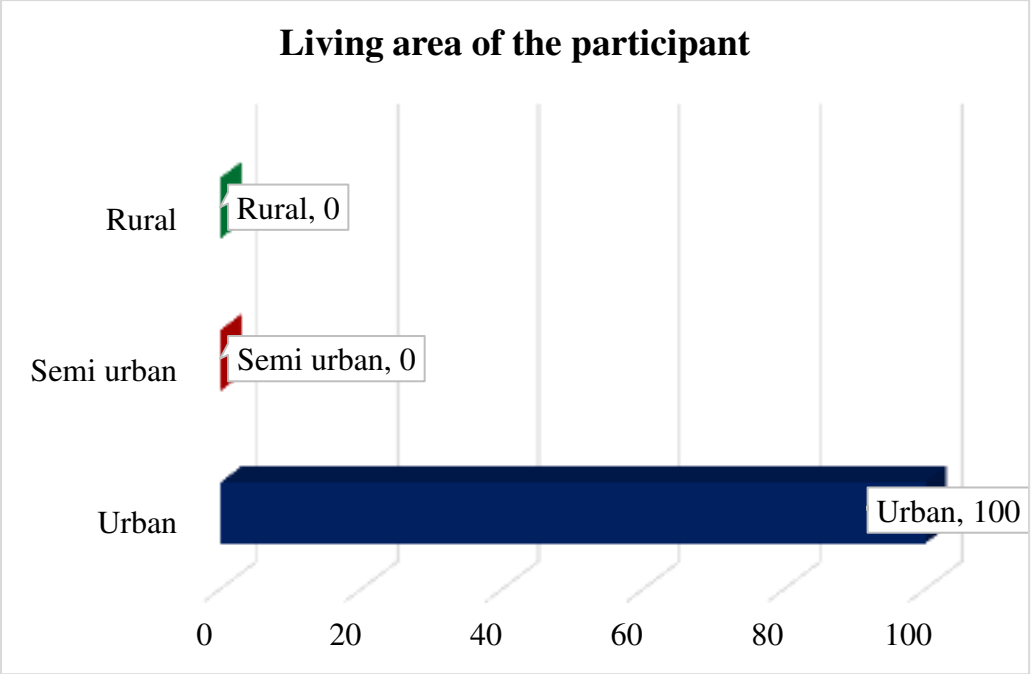



Fig-3: Living area of the participant

### 4.1.5 Types of family of the participant

In this study were 42.9% were extended and 57.1% were nuclear in the participant.

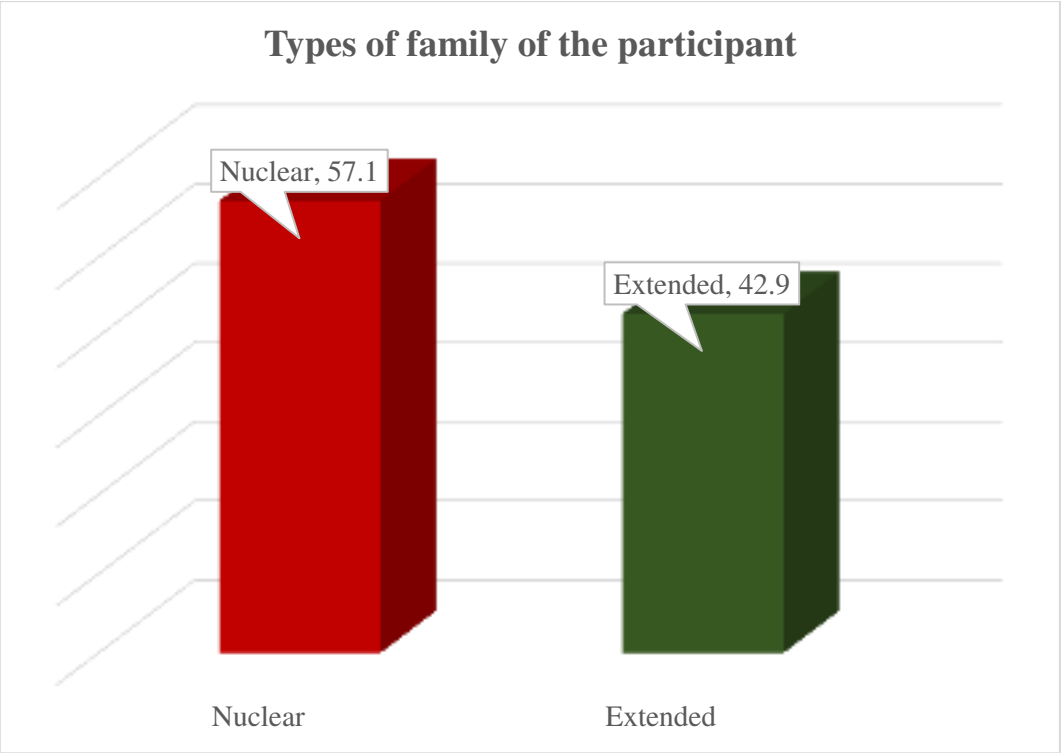



Figure-4: Types of family of the participant

### 4.1.6 Occupation of the participant

In this study 35% participant were job.

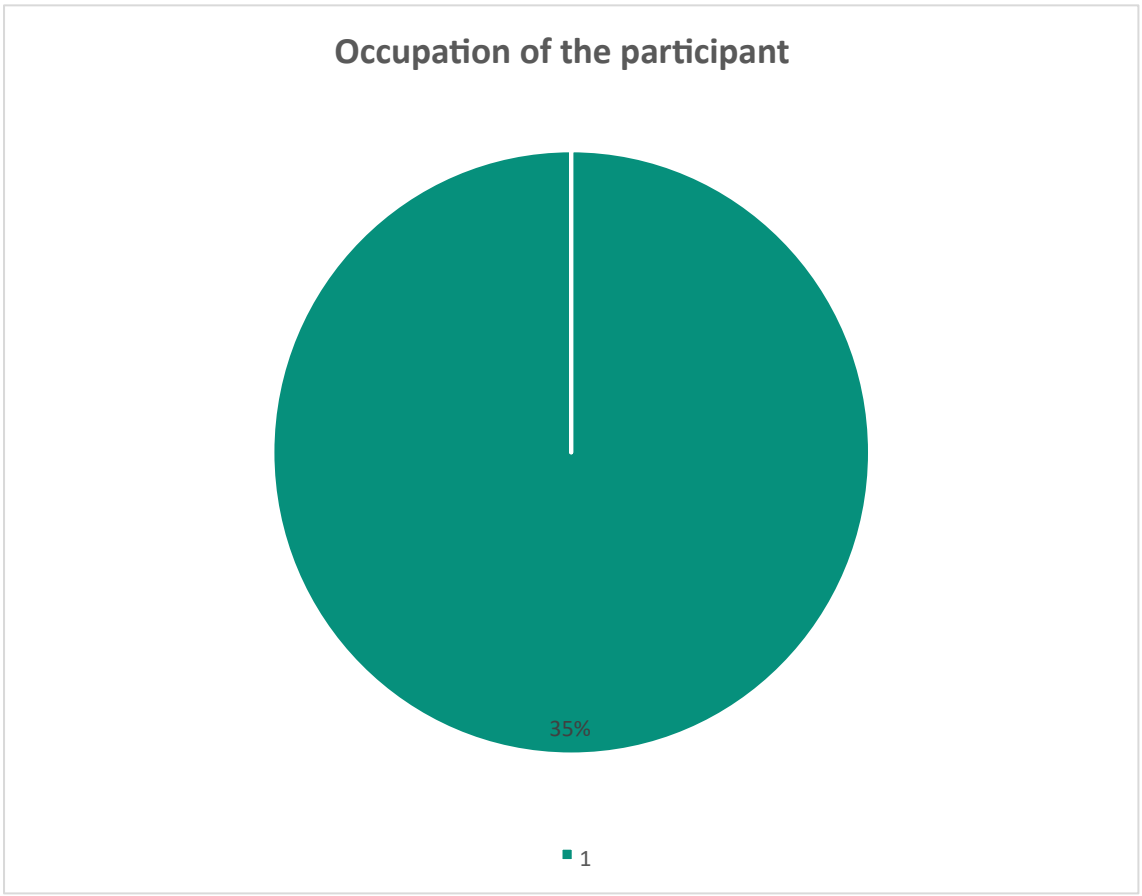



Figure-5: Occupation of the participant

### 4.1.7 Income of the participant

This study's participant means and standard deviation of participant income where were Mean ± SD= 29000.00±.9468.773; here 20000-30000 taka were 85.7%, >41000 taka were 14.3% and of the participant.

| **Amount** | **Percentage** | **Frequency** | **Mean** | **SD** |
|---|---|---|---|---|
| 20000-30000 | 85.7 | 96 | 29000.00 | 9468.773 |
| >41000 | 14.3 | 16 | | |
| Total | | 112 | | |

Table-2: Income of the participant

### 4.1.8 Religion of the participant

In this study were 29% Hindu and 71% were Muslim of the participant.

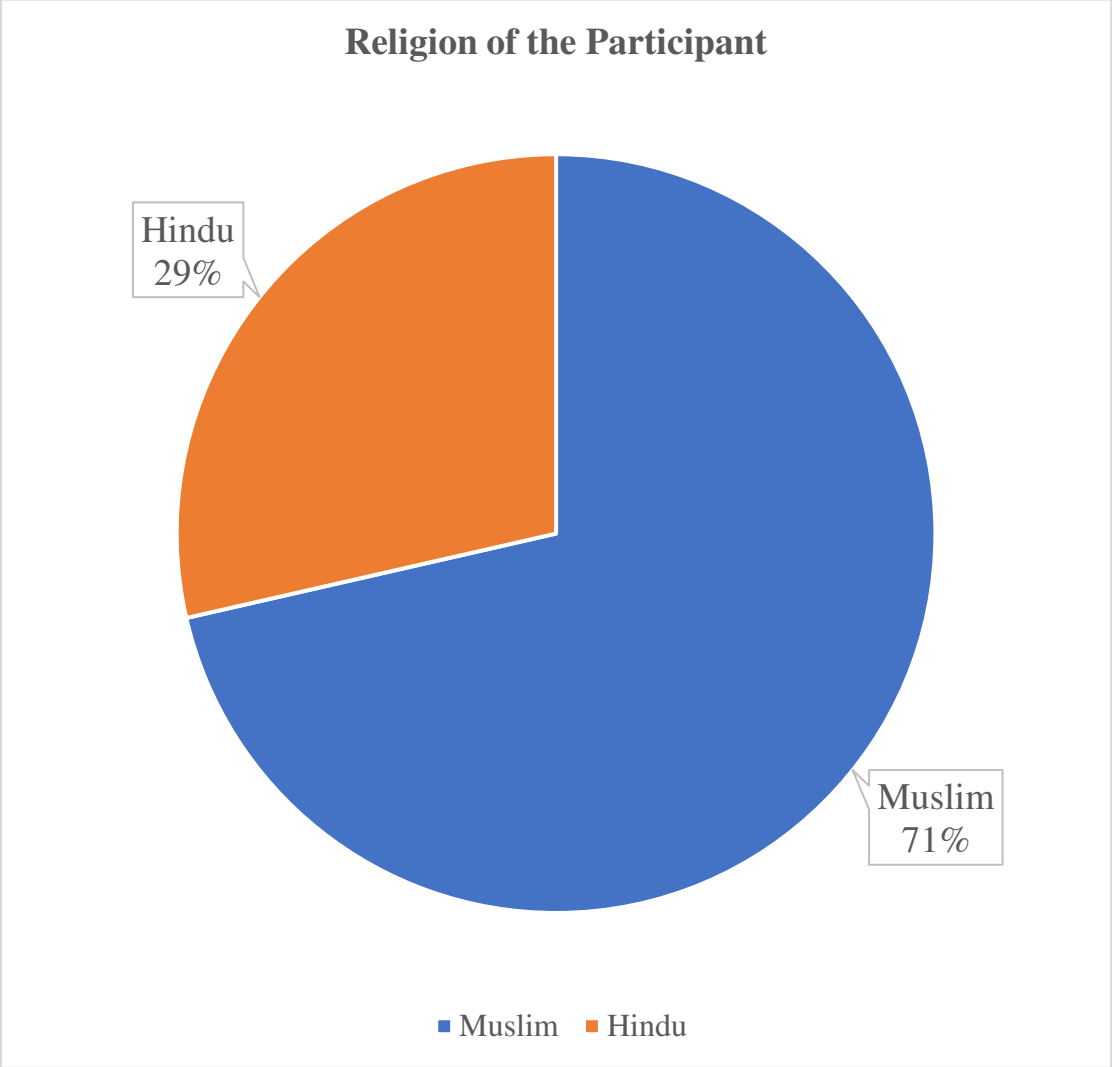



Figure-6: Religion of the participant

### 4.1.9 Martial status of the participant

In this study 14.3% were Unmarried and 85.5% were married.

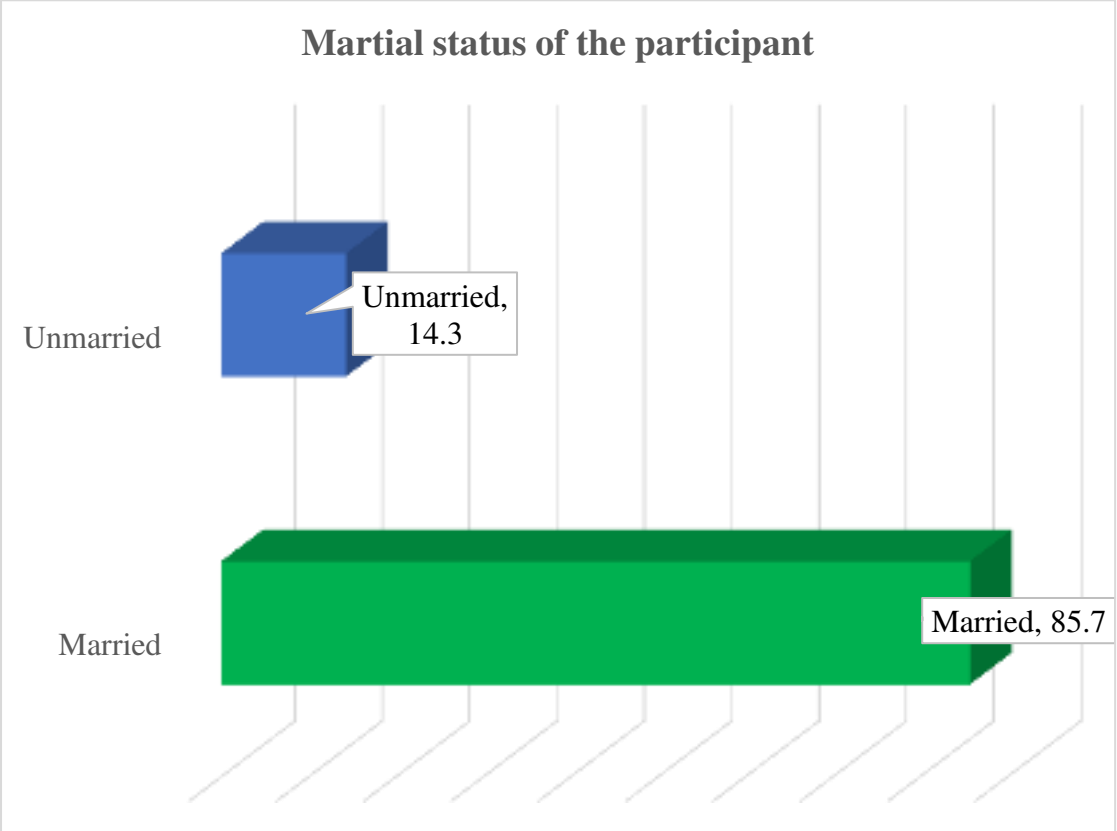



Figure-7: Martial status of the participant

## 4.2: SPADI score

In this study pain score was 32.29%, Disability score was 26.14% and total Spadi score was 14.00%.

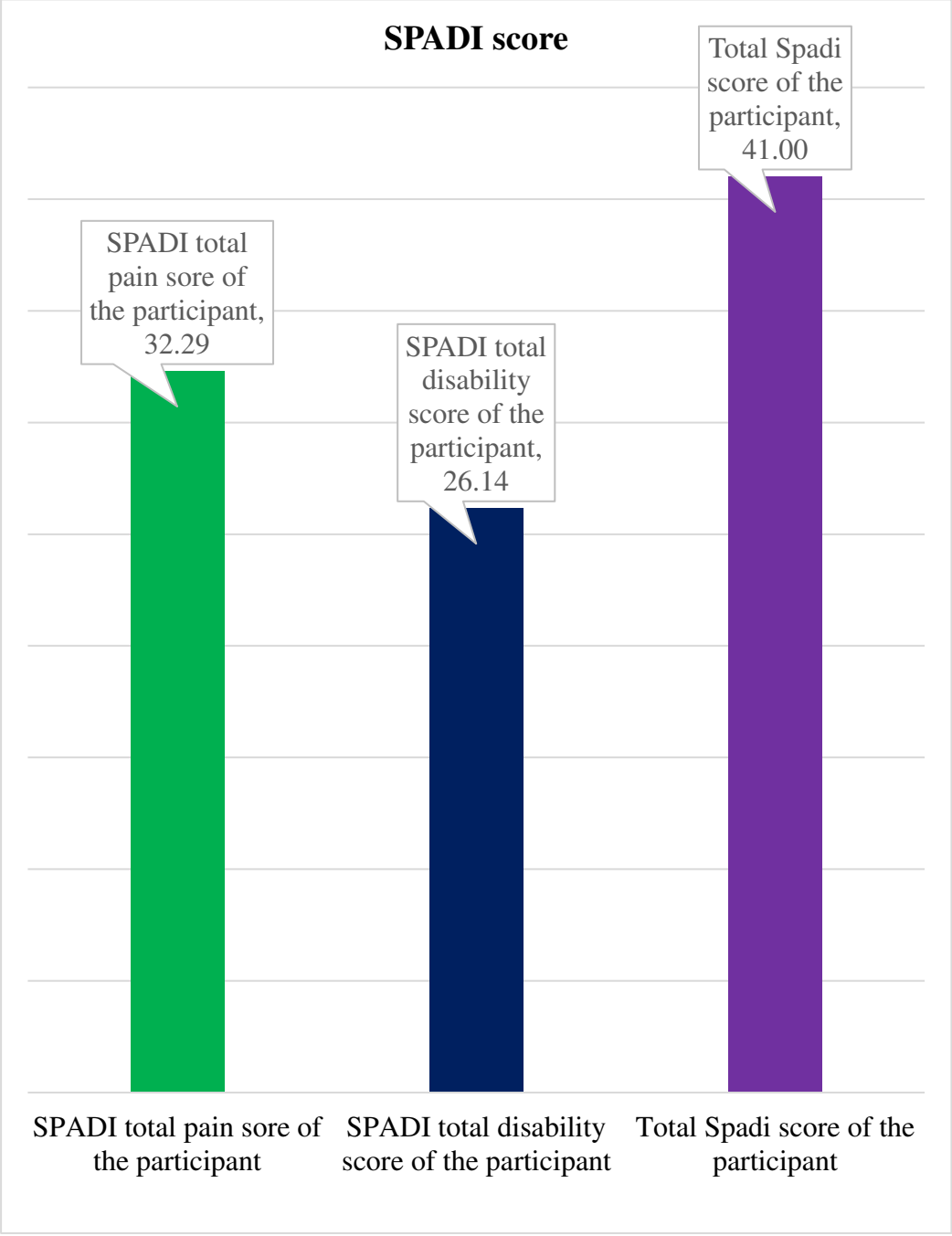



Figure-8: SPADI score

### 4.3: ASSOCIATION

#### 4.3.1: Association between Age group of the participant and SPADI total pain sore of the participant

The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and Participant know about stroke.

| **Association between Age group of the participant and SPADI total pain sore of the participant** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | P value | Chi value |
| Age of the participant | SPADI total pain sore of the participant | | | | | | | | .390 | 12.718 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 22-42 | 10 | 7 | 9 | 8 | 11 | 8 | 5 | 58 | | |
| 43-63 | 6 | 8 | 7 | 7 | 3 | 5 | 8 | 44 | | |
| >63 | 0 | 1 | 0 | 1 | 2 | 3 | 3 | 10 | | |
| Total | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 112 | | |

Table no:3- Association between Age group of the participant and SPADI total pain sore of the participant

### 4.3.2: Association between Age group of the participant and SPADI total disability score of the participant

The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and SPADI total disability score of the participant

| **Association between Age group of the participant and SPADI total disability score of the participant** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | P value | Chi value |
| Age of the participant | SPADI total disability score of the participant | | | | | | | | .390 | 12.718 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 22-42 | 7 | 8 | 10 | 9 | 11 | 8 | 5 | 58 | | |
| 43-63 | 8 | 5 | 6 | 7 | 3 | 7 | 8 | 44 | | |
| >63 | 1 | 3 | 0 | 0 | 2 | 1 | 3 | 10 | | |
| Total | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 112 | | |

Table no:4- Association between Age group of the participant and SPADI total disability score of the participant

### 4.3.1: Association between Age group of the participant and Total Spadi score of the participant

The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and Total Spadi score of the participant

| **Association between Age group of the participant and Total Spadi score of the participant** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | P value | Chi value |
| Age of the participant | Total Spadi score of the participant | | | | | | | | .390 | 12.718 |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | | | |
| 22-42 | 7 | 10 | 8 | 9 | 8 | 11 | 5 | 58 | | |
| 43-63 | 8 | 6 | 7 | 7 | 5 | 3 | 8 | 44 | | |
| >63 | 1 | 0 | 1 | 0 | 3 | 2 | 3 | 10 | | |
| Total | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 112 | | |

Table no:5- Association between Age group of the participant and Total Spadi score of the participant

# CHAPTER-V DISCUSSION

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 laptop5s 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 symptom.

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 consist of six subscale: 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.

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).

The study aimed to identify pain and disability among the pain and disability on Shoulder among professional computer users. The data was collected by the researcher himself. Structured questions were used with both open-ended and close-ended questions in the questionnaire. The data were analyzed with the Microsoft Office Excel 2019 with SPSS 25 version software program. In this study researcher use bar, Colum, Figure, Pie chart so show the result of the body. Because it is easier to make sense of a set of data.

This study's participant means and standard deviation of participant age where are Mean± SD= 1.57±.654; here 22-43 years 51.8%, 43-63 years 39.3% and >63 years 8.9% of the participant.

Income of the participant. In this study 35% participant were job. In this study were 42.9% were extended and 57.1% were nuclear in the participant. In this study 100% participant was living in urban. And do not living rural and semi urban in this study. In this study 8.0% were SSC, 1.8%were HSC and 90.2% were others of the participant. In this study were only 100% male and not any female. This study's participant means and standard deviation of participant income where were Mean ± SD= 1.29±.703; here 20000-30000 taka were 85.7%, >41000 taka were 14.3% and of the participant. In this study 14.3% were Unmarried and 85.5% were married. In this study were 29% Hindu and 71% were Muslim of the participant.

In this study pain score was 32.29%, Disability score was 26.14% and total Spadi score was 14.00%. The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and Participant know about stroke. The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and SPADI total disability score of the participant. The table shows that the chi value was 12.718 and the P-value was .390. So, there is no significant Association between Age group of the participant and SPADI total disability score of the participant.

# CHAPTER-VI CONCLUSION AND RECOMMENDATIONS

## 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 112 participants among the 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.

## Limitation of the study

The following limitations should be considered for this study:

As I am student & I had to bear all the expenses from my own pocket, that's why I had faced fund limitations. As I am a student, so I could not go to the remote areas for collecting data. As I could not take calculated data for time limitations that's why this study might not show the actual view of the current scenario. Since it was a new topic for me and I had no experience about collecting data and had not any statistical expertise hence it might not show accurate result but few researchers from other countries had done some 19 related research on this topic before that's why there was some evidence to support the outcome of this study. If this study could have some extra time to conduct this study, then it could be considered more valid & applicabl

## Recommendation

The recommendation evolves out of the content in which the study was conducted. Therefore main recommendation would be made. Further research of the different perspectives emerged from the study, is recommended: In Bangladesh, as a new knowledge on pain and disability among the pain and disability on Shoulder among computer users of Bangladesh. should be strong evidenced based so that can develop a with other professionals standard in comparison with the support of the global evidence of rigorous. This type of study should be considered that need to be collected adequate resources that knowledge on this area could be extended and later result can obtain to generalize to the population. During further research it is recommended to take more samples with adequate time to solve the recent problems areas for better result and perspectives

# REFERENCES


Bakhsh, W. and Nicandri, G., 2018. Anatomy and physical examination of the shoulder. *Sports medicine and arthroscopy review*, *26*(3), pp.e10-e22.

Breckenridge, J.D. and McAuley, J.H., 2011. Shoulder pain and disability index (SPADI). *Journal of physiotherapy*, *57*(3), pp.197-197.

Chen, H., Zhang L., Wang Z., Yang K H and King A I., (2011).Biomechanics of the Neck. [e-book]. Shanghai: InTech. Available: Hotel equatorial Shanghai website

Chiu, T. W., Leung, S. L. and Lam, K. W. (2012). Neck pain in Hong Kong: a telephone survey on consequences and health service utilization. Hong Kong Medical Journal. 18(4), pp. 13-15.

Cote, P. et al., 2008. The burden and determinants of neck pain in workers: results of the Bone and Joint Decade 2000–2010 Task Force on Neck Pain and Its Associated Disorders. Spine 33(4 Suppl):S60–74.

Du, T., Lu, G., Li, J., Ni, B., Shu, W., Sun, T., Dou, Y. and Zhu, H., 2022. Pain-free survival after endoscopic rhizotomy versus radiofrequency for lumbar facet joint pain: a real-world comparison study. *Pain Physician*, *25*(1), p.E87.

Falla, D., Graven-Nielsen, T., Arendt-Nielsen, L., Mense, S., 2010. Neuromuscular control of the cervical spine in neck pain disorders, editors. Fundamentals of musculoskeletal pain. Seattle: IAS PRESS, 417–30.

Falla, D., Lindstrom, R., Rechter, L., Boudreau, S. and Petezke, F. (2013).Effectiveness of an 8-week exercise programme on pain and specificity of neck muscle activity in patients with chronic neck pain: A randomized controlled study. European Journal of Pain, 17 (10), pp. 1517-1718.

Gabani, F.L., Mesas, A.E., da Silva Santos, M.C., González, A.D. and de Andrade, S.M., 2022. Chronic musculoskeletal pain and occupational aspects among Brazilian teachers. *International Journal of Occupational Safety and Ergonomics*, *28*(2), pp.1304-1310.

Goldberg, D.S. and McGee, S. (2011). Pain as a global public health priority. BMC Public health, doi:10.1186/1471-2458-11-770.

Goodley, D., Lawthom, R., Liddiard, K. and Runswick-Cole, K., 2019. Provocations for critical disability studies. *Disability & Society*, *34*(6), pp.972-997.

Hagag, S.A. and Magd, S.A. (2011). The Effect of Ergonomic Intervention Program on Neck Pain among Computer Employees at a Communication Company in Zagazig City. Journal of American Science, 7(10), pp. 503-509.

Halvorsen, M., Abbott, A., Peolsson, A. and sa Dedering, A. (2014). Endurance and fatigue characteristics in the neck muscles during sub-maximal isometric test in patients with cervical radiculopathy. European Spine Journal, 23, pp. 590–598.

hardwaj, Y. and Mahajan, R., 2017. Prevalence of neck pain and disability in computer users. *Int J Sci Res*, *6*, pp.1288-1290.

Heredia-Rizo, A.M., Petersen, K.K., Madeleine, P. and Arendt-Nielsen, L., 2019. Clinical outcomes and central pain mechanisms are improved after upper trapezius eccentric training in female computer users with chronic neck/shoulder pain. *The Clinical journal of pain*, *35*(1), pp.65-76.

Kaur, M. and Singh, S., 2021. Neck and Upper Extremity Discomfort and its relationship with extent of computer usage among university students. *Indian Journal of Physiotherapy and Occupational Therapy*, *15*(1), pp.76-84.

Kim, J. H., Lee, H. S. and Park, S. W. (2015). Effects of the active release technique on pain and range of motion of patients with chronic neck pain. Journal of Physical Therapy Science, 27, pp. 2461-2464.

Kraemer, K., Moreira, M.F. and Guimarães, B., 2020. Musculoskeletal pain and ergonomic risks in teachers of a federal institution. *Revista Brasileira de Medicina do Trabalho*, *18*(3), p.343.

Lietz, J., Kozak, A. and Nienhaus, A., 2018. Prevalence and occupational risk factors of musculoskeletal diseases and pain among dental professionals in Western countries: A systematic literature review and meta-analysis. *PloS one*, *13*(12), p.e0208628.

McCausland, C., Sawyer, E., Eovaldi, B.J. and Varacallo, M., 2018. Anatomy, shoulder and upper limb, shoulder muscles.

Mohanty , p.p., Singh , A,.Pattnaik,M,.(2017). Factors Responsible for Musculoskeletal Pain among Computer Operators". EC Orthopaedics 6.1, 15-31.

Monika, Priyanka R., Shabnam J.,(2017). PREVALENCE OF NECK PAIN AND LAPTOP USING BEHAVIOUR AMONG POST GRADUATE STUDENTS. Int J Physiother Res;5(4):2271-2275. DOI: 10.16965/ijpr.2017.185.

Piepzna-Samarasinha, L.L., 2018. *Care work: Dreaming disability justice* (p. 182). Vancouver: arsenal pulp press.

Pompan, D. (2011). Appropriate use of MRI for evaluating common musculoskeletal conditions. American Family Physician, 83(8), pp. 883-884.

Pope, D.P., Croft, P.R., Pritchard, C.M., Silman, A.J. and Macfarlane, G.J., 1997. Occupational factors related to shoulder pain and disability. *Occupational and environmental medicine*, *54*(5), pp.316-321.

Ranasinghe, P., Perera, Y.S., Lamabadusuriya, D.A., Kulatunga, S., Jayawardana, N., Rajapaksa, S., and Katulanda, P., (2011). Work related complaints of neck, shoulder and arm among computer office workers: a crosssectional evaluation of prevalence and risk factors in a developing country. Environmental Health, doi:10.1186/1476-069X-10-70.

Rist, P.M., Hernandez, A., Bernstein, C., Kowalski, M., Osypiuk, K., Vining, R., Long, C.R., Goertz, C., Song, R. and Wayne, P.M., 2019. The impact of spinal manipulation on migraine pain and disability: a systematic review and meta-analysis. *Headache: The Journal of Head and Face Pain*, *59*(4), pp.532-542.

Sherman, K. J., Cook, A. J., Wellman, R. D., Hawkes, R. L., Kahn, J. R., Deyo, R. A. and Cherkin, D. C. (2014). Five-Week Outcomes From a Dosing Trial of Therapeutic Massage for Chronic Neck Pain. Annals of Family Medicine, 12 (2), pp. 112-120.

Spanou, A., Mamais, I., Lamnisos, D. and Stasinopoulos, D., 2020. Reliability and validity of the Greek shoulder pain and disability index in patients with shoulder pain. *Disability and rehabilitation*, *42*(9), pp.1299-1304.

Tone, M., Nils, M., & Bente, E., Moen, 2007. Physical activity is associated with a low prevalence of musculoskeletal disorders in the Royal Norwegian Navy: a cross sectional study, online, retrieved 11 September 2008.

Wettstein, M., Eich, W., Bieber, C. and Tesarz, J., 2019. Pain intensity, disability, and quality of life in patients with chronic low Back pain: does age matter?. *Pain Medicine*, *20*(3), pp.464-475.

Wood, L. and Hendrick, P.A., 2019. A systematic review and meta-analysis of pain neuroscience education for chronic low back pain: Short-and long-term outcomes of pain and disability. *European Journal of Pain*, *23*(2), pp.234-249.

**PPENDIX- I**

SAIC COLLEGE OF MEDICAL SCIENCE AND TECHNOLOGY

Approved by Ministry of Health and Family Welfare
Affiliated with Dhaka University

Ref :

Date : .....

Ref.No: SCMST/PT/ERB-2017-18/1-2023/53

3rd January'2023

To

Masum Rana

4th Professional B.Sc. in Physiotherapy

Saic College of Medical Science and Technology (SCMST)

Mirpur-14, Dhaka-1216.

Sub: Permission to collect data

Dear Rana,

Ethical review board (ERB) of SCMST pleased to inform you that your proposal has been reviewed by ERB of SCMST and we are giving you the permission to conduct study entitled "Pain and disability on shoulder among professional computer users" and for successful completion of this study you can start data collection from now.

Wishing you all the best.

Thanking You,

11.01.23

Head of ERB

Ethical Review Board

Saic College of Medical Science and Technology

4.01.23

Principal

Saic College of Medical Science and Technology

Mirpur-14, Dhaka-1216

Address: Saic Tower, M-1/6, Mirpur-14, Dhaka-1216.Mobile:01936005804
E-mail: simt140@gmail.com, Web:www.saicmedical.edu.bd

**APPENDIX- II**

## Gant Chart