COMMON WORK RELATED MUSCULOSKELETAL DISORDERS AMONG THE PEDIATRIC PHYSIOTHERAPISTS AT CRP

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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

COMMON WORK RELATED MUSCULOSKELETAL DISORDERS AMONG THE PEDIATRIC PHYSIOTHERAPISTS AT CRP

Submitted by **Md. Mainul islam shohag**, for the partial fulfillment of the requirements for the degree of Bachelor of Science in Physiotherapy (B.Sc.PT).

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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 declare that for any publication, presentation or dissemination of information of the study. I would be bound to take written consent from my supervisor.

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Acknowledgement

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Abbreviations

BHPI: Bangladesh Health Professions Institute.

CRP: Centre for the Rehabilitation of the Paralyzed.

MSD: Musculoskeletal disorder

WRMD: Work related musculoskeletal disorder

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Abstract

Purpose: Increasing evidence suggests that musculoskeletal disorders are common in workers in the health care industry. Some literatures suggest that pediatric physiotherapists are at high risk of work related musculoskeletal disorder. *Objectives:* So, the objective this research was carried out to identify the common work related musculoskeletal disorders among the pediatric physiotherapists at CRP. *Methodology:* The prospective quantitative research was carried out to accomplish the objective of the study. 35 participants among the pediatric physiotherapists 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 16.0 version software program. Descriptive statistics was performed to obtain the result of the study. *Results:* After analysis researcher found that among the 32 participants who have suffered from WRMD. Among them 13(40.6%) suffered in low back pain, 8(25.0%) suffered in neck & shoulder pain, 2(6.20%) suffered in upper back & neck pain, 5(15.60%) suffered in neck & back pain, 1(3.10%) suffered in knee & ankle pain and 3(9.40%) suffered in mechanical pain. WRMD lowest age was 23 and highest age was 39 years. And frequency were 25.70% participants in /between 20-25 years, 54.30% participants in between 26-30 years, 17.10% participants in between 31-40 years, 2.90% participants in between 36-40 years. In WRMD 18.8% participants stressful positions were performing same task over and over, 28.2% participants were working in awkward and cramped position, 37.5% participants were working in the same position for long periods, 12.5% participants were bending or twisting back or neck in an awkward way, 3.10% participant was not enough rest during the day. So most common risk factor were working in same position for a long period 37.5% and working in awkward or cramped position 28.2%. *Conclusion:* This study contributes to the understanding of work-related disorders among physiotherapists from a south-east Asian perspective where the profession is in its development stage.

Key words: Musculoskeletal disorder, Work related musculoskeletal disorder.

CHAPTER-I INTRODUCTION

Musculoskeletal disorders (MSDs) have become most common problem worldwide during past decades and increasing day by day. It is a common cause of work related disability among worker with substantial financial consequence due to workers compensation and medical expenses (Anderson, 1996). Musculoskeletal disorders which are often soft tissue injuries occur when there is a mismatch between the physical requirements of the job and physical capacity of the human body (Safe computing Tips, 2005- 2008).

Work related musculoskeletal disorders (WRMDs) also called overuse injuries, have accounted for a significant proportion of work injuries and workers compensation claims in western industrialized nations since the late 1980s. Recent epidemiological studies have greatly improved methods to distinguish the contribution of work place and non-workplace risk factors to the development and severity of MSDs (Mary & Ann, 2006). All activities that perform using musculoskeletal system are walking, sitting, running, playing, dancing, and working.

The musculoskeletal system is a complex entity, composed of bones, joints muscles, tendons, ligaments, bursa, nerve and blood vessels. Postures and movements are dependent on the functioning of the musculoskeletal system but an overload of physically strenuous tasks may pose a threat to it. Awkward posture, repetitive work or handling heavy materials may damage the system and leading to musculoskeletal fatigue, pain or disorders.

MSDs are caused when the physical capacity of the muscles, joints, ligaments etc. is not in balance with the external forces that act upon the body (European Agency for Safety and Health at work, 1993). Several risk factors are associated with the development or exacerbation of MSDs in the workplace, including physical, biomechanical, individual predisposition psychosocial conditions (Bureau of Labor Statistics, 2005).

1.1 Background

Work related musculoskeletal disorders are common and increasing in the United States. Between 1982 and 1992, the reported number of musculoskeletal disorders of the upper and lower extremity has steadily increased, accounting in 1992 for more than 60% of all occupational illnesses (Bureau of labor statistics, 1993). Depending of the job, these disorders may cause pain, restricted motion and weakness in the hands, arms, shoulders, neck, back and lower limbs. Coupled with the human costs in suffering and lost wages, work related musculoskeletal disorders are responsible for growing costs as evidenced by increases in workers compensation costs as well as escalating costs of diagnosis and treatment. Total compensable costs to the nation for these disorders are estimated to exceed 20 billion annually (Webster & Snook, 1994). Work related musculoskeletal disorder can result in direct costs, such as compensation and medical expenditure, as well as indirect costs such as disruption in productivity quality, worker replacement costs, training and absence costs. It has become a major concern because of the negative impact on the health and productivity of employees and is there for a significant problem for employers and workers to pay attention to (Puts & Anderson, 1988). Bureau of labor and statistics (BLS) reports that in 1994 (the last year of data available at the time this report was prepared) approximately 705,800 cases (32%) are the result of overexertion or repetitive motion. Especially there are 367,424 injuries due to overexertion in lifting (65% affected the back); 93,325 injuries due to overexertion in pushing or pulling objects (52% affected the back) 68,992 injuries due to overexertion in holding, carrying, or turning objects (58% affected the back). Total across these three categories, 47,861 disorders affected the shoulder. Of these injuries or illness, 55% affected the wrist, 7% affected the shoulder, and 6% affected the back. Musculoskeletal disorders are major cause of disability in working population. Government statistics indicated that MSD accounted for one quarter of claims for “incapacity benefit” in the UK in 1996(Griffiths, 1998). Published research data also confirm the high incidence of MSD. For instance, in a large scale survey of a stratified random sample carried out in 1995, MSD accounted for 57% of total those reporting working related illness (Jones et al, 1998). Similarly, Houtman et al, (1994) found that 25% reported back pain complaints, 8% chronic back pain problems and 24% muscle and joint complaints in the Netherland. In 2003, for every 100,000 workers, there were 32 new MSD cases. This means that MSDs

account for 50% of all new cases of occupational disorders in the EU, 50% of all work related health problems. Moreover the number of MSD cases is increasing over time. In 2001, 19 workers in every 100,000 suffered from a new MSD. This number had almost doubled by 2003 (32 per 100,000 workers) (European Agency for safety and Health at work, 1993).

1.2 Rationale

From this study pediatric physiotherapist will able to identify the risks that can control and review there their activities. Pediatric physiotherapist may provide proper communication recommendation for every single risk which will be helpful for them. Beside this, it will be help to established ergonomic guidelines for pediatric physiotherapist to the space, equipments, tools, instruments, furniture and environmental condition which are mandatory in the design of pediatric unit of CRP. This study will also help to discover the lacking area of a pediatric physiotherapist, especially about their posture before doing any activities. Beside this it will be help to professional development which is mandatory for current situation. From this study researcher can identify the common musculoskeletal disorders of clinical pediatric physiotherapist in pediatric unit, CRP. So investigator can help them to tech and give them proper education about the posture and other preventive methods. By this there will develop a good relationship with both medical professional, which are very important for MDT approach. And it will help to discover the role and importance of physiotherapy in every sector of Bangladesh. Peter V (2000) claimed that MSDs may cause a great deal of musculoskeletal pain and suffering among afflicted workers. Workers experiencing aches and pains on the job may not be able to do quality work. During treatment procedures clinical pediatric physiotherapist work in awkward body posture, sometime slouch posture, often accompanied by repetitive movements of both upper & lower limb, Changing posture , increased muscle activity and prolonged static head and back postures. In addition, when clinical pediatric physiotherapist gives treatment they do not any concentration about their posture so suffered from WRMD (Albayrak et al, 2007).

1.3 Research question

What are the common worked related musculoskeletal disorders among the pediatric physiotherapist at CRP?

1.4 Aims

Identify the worked related musculoskeletal disorders among the pediatric physiotherapist at CRP.

1.5 Objectives

1.5.1 General objective

- To identify the common worked related musculoskeletal disorders among the pediatric physiotherapist at CRP.

1.5.2 Specific objective

- To estimate the prevalence of work related musculoskeletal disorders among the pediatric physiotherapist at CRP.
- To find out the risk factors that are considered a problem for the pediatric physiotherapist at CRP.
- To determine the most affected body part of the pediatric physiotherapist at CRP.

1.6 Operational definition

Work related musculoskeletal disorder

Work-related musculoskeletal disorders (WRMD) are the disorders of muscles, tendons, ligaments and nerves that develops due to work related factors such as repetitive work or activities with awkward postures with symptoms of pain, aches, parathesis, tingling , numbness and stiffness etc. Some examples of musculoskeletal disorders include back pain, neck pain, carpal tunnel syndrome, tendonitis and tenosynovitis etc.

Pediatric Physiotherapist

A qualified Physiotherapist who works in a Pediatric area is called pediatric physiotherapist.

CHAPTER-II LITERATURE REVIEW

Musculoskeletal injuries affect muscles, tendons, ligaments and nerves. These injuries can develop when the same muscles are used repeatedly or for a long time without taking time to rest. The chance of getting this type of injury increases if the force exerted is high and or the job required an awkward postures. Some examples of musculoskeletal disorders include back pain, neck pain, carpal tunnel syndrome, tendonitis and tenosynovitis (Workplace injuries and ill-nesses & Musculoskeletal Disorders and Workplace Factors, 1992). Other expressions used to describe MSDs include Repetitive Strain Injuries (RSIs), Work related musculoskeletal disorder (WRMD, Cumulative Trauma Disorders, Overuse Injuries, Repetitive Motion Disorde rs) (Peter, 2000).

Musculoskeletal disorders are sometimes called ergonomic injuries and illnesses. Ergonomics is the study of the worker's interaction with tools, equipment, environment, jobs, tasks, work methods, work rates, and other systems. The federal Bureau of Labor Statistics (BLS) has defined musculoskeletal disorders (MSDs) as injuries and disorders to muscles, nerves, tendons, ligaments, joints, cartilage, and spinal discs. MSDs do not include injuries resulting from slips, trips, falls, or similar accidents. Examples of MSDs include many kinds of sprain and strain, carpal tunnel syndrome, tendinitis, sciatica, and low back pain. MSDs result from bodily reactions due to bending, climbing, crawling, reaching, or twisting, and from overexertion and repetitive motion (Maier & Ross-Mota, 2000).

Medical terms used to describe MSDs to various parts of the body include low back pain, tendinitis, bursitis, carpal tunnel syndrome, epicondylitis, trigger finger, thoracic outlet syndrome, carpet layers knee and degenerative disc disease (Peter, 2000).

Work-related musculoskeletal disorders (WMSDs) are a group of painful disorders of muscles, tendons, and nerves. Work activities which are frequent and repetitive, or activities with awkward postures cause these disorders which may be painful during work or at rest (Work-related Musculoskeletal Disorders, 2005).

Applying manual force loads the muscles and tendons of the arms .Repetitive work using the same muscles and tendons may be responsible for fatigue and injuries. In awkward postures the joints are more susceptible to injuries and the muscles have less capacity for exerting force. Expose the hands to vibration and contribute to potential disruption to the blood circulation in the fingers and to the nerves of the hand and arm. Workers who have long-term static postures this type of repeated static posture can give rise to injuries, particularly when repeated for months or years. Prolonged standing may result in fatigue and discomfort in the legs. It can lead to the development of musculoskeletal disorders (e.g. painful feet and other foot problems) and varicose veins. Prolonged sitting requires the muscles to hold the trunk, neck and shoulders in a fixed position. This squeezes the blood vessels in the muscles, reducing the blood supply. An insufficient blood supply accelerates fatigue and makes the muscles prone to injury. Manual handling refers to the transfer, pushing, pulling and carrying of loads by one or more employees. Daily exposure to physical risk factors and insufficient rest or recovery time are among the principal organizational factors that can lead to MSDs. Mental strain can cause muscular tension, and increase existing physical strain. Work conditions that may increase mental strain include Psychologically demanding activities, in which the workers are exposed to high levels of work stress, work pressure and mental demands, as a consequence for example of tight deadlines and low levels of autonomy and Activities in which there is little support from colleagues, supervisors and managers (European Agency for Safety and Health at Work, 1993).

Individuals differ in their susceptibility to MSDs. Factors such as prior medical history, physical capacity and age are very important. Obesity, pregnancy, rheumatoid arthritis, acute trauma and endocrinological disorders are other examples of individual non-occupational factors that may affect the occurrence of MSDs. Social context provides some important non-work risk factors relating to MSDs. Some types of sport, leisure activities and housekeeping work at home can all increase susceptibility to MSDs. The relation between work activities and a particular musculoskeletal disorder is multi-factorial. This means that when different physical factors are present, coexisting with organizational factors (and also individual and social factors), a work

situation may arise in which there is a high risk of developing MSDs (European Agency for Safety and Health at Work, 1993).

This is difficult to predict to measure the time to develop a WRMD. An employee may notice symptoms such as muscle, joint or tendon soreness within the first several weeks of a new job. Workers with pre- existing medical problems may be at higher risk of developing symptoms those healthy workers. Some disorders may take several years before symptoms are identified. Some employees may never develop a WRMD. The length of daily working hours as a risk factor for the development of musculoskeletal complains was studied, it was found that some sample worked 8 hours/ day and few were worked 5 hours/ day. Working part time was shown to postpone the occurrence of sick leave due to musculoskeletal disorders by approximately half a year, there was no lasting effect on the reduction in working hours on sick leave due to shoulder- neck complaints, but a reduction in low back complaints was identified. It is suggested that any reorganization of work activities to counteract musculoskeletal injuries from repetitive work should aim to break up the muscular activity patterns over time periods considerably shorter than the 5 hours working /day of the part time workers in the present study (Meligrsted & Westgaard, 1991).

Work related musculoskeletal injuries can take different forms. The onset and development these injuries of is still not well known. Many theories some complementary and other contradictory have attempted to explain the phenomenon and it is clear that the issue is still not fully understood. Despite the diversity of applications and mechanism involved, WMSDs show a certain number of similar characteristics. Although the onset mechanisms are not clearly established, it is generally agreed that the injuries result from overuse, beyond the body's recovery capacity. WMSDs occur because a structure is abused repetitively and is made to endure a work load that it cannot tolerate without negative consequences. WMSDs develop over time the process evolves gradually with repeated overuse with and insufficient recovery. The process may vary from well set in surreptitiously, with no apparent symptoms only to one day appear suddenly and develop rapidly. More often slight discomfort are felt, which worsen gradually until they lead to work stoppage.

The disorder can only take few days to develop. But more often it stretches, out for weeks, months and even years. WMSDs do not constitute a disease that can be contracted, but a process that develops over time. As WMSDs develop gradually therefore action can be taken before the process gets too far. If the overuse is stopped in time, the body can recover and the aliment can recede without leaving any trace. Complete recovery can possible, and prevention can be termed effective if it occurs early. The starting point of WMSDs is overuse. But this overload generally steams from a combination of factors and not from one single cause. Be it repetition, posture or effort, no single risk factor is essential in and of itself. A very demanding effort made in a particularly bad posture can suffice to create musculoskeletal problems, even if the rate of repetition is very low. Conversely a less demanding tasks performed in a more or less adequate posture can cause damage if it is repeated thousands of times per day. Because of this multiple causes, prevention must often rely on a combination of solutions based on a good knowledge of the situation. And because the situation can be so diverse, a universal solution is also impossible (Simoneau, et al, 1996).

The prevalence of MSDs increases as people enter their working years. By the age of 35, most people have had their first episode of back pain (Guo et al, 1995). Musculoskeletal impairments are among the most prevalent and symptomatic health problems of middle and old age (Bruce & Bernard, 1997). Some studies have found a higher prevalence of some MSDs in women (Bernard et al, 1994). A male to female ratio of 1:3 was described for carpal tunnel syndrome (CTS) in a population study in which occupation was not evaluated (Bruce & Bernard, 1997).

Several papers have presented evidence that a positive smoking history is associated with low back pain, sciatica, or intervertebral herniated disc. Some epidemiologic support exists for the relationship between back injury and a mismatch of physical strength and job tasks. (Bruce & Bernard, 1997)

Weight, height, body mass index (BMI), and obesity have all been identified in studies as potential risk factors for certain MSDs, especially CTS and lumbar disc herniation (Bruce & Bernard, 1997). Diabetes Mellitus**,** thyroid problems**,** kidney

problems (Renal insufficiency, failure, stones, etc.), arthritis, high blood pressure, gout**,** Reynaud's phenomenon (European Agency for Safety and Health at Work, 1993).

According to (Work-related Musculoskeletal Disorders, 2005), Pain is the most common symptom associated with WMSDs. In some cases there may be joint stiffness, muscle tightness, redness and swelling of the affected area. Some workers may also experience sensations of "pins and needles," numbness, skin color changes, and decreased sweating of the hands. WMSD may progress in stages from mild to severe.

Aching and tiredness of the affected limb occur during the work shift but disappear at night and during days off work. No reduction of work performance. Aching and tiredness occur early in the work shift and persist at night.

Aching, fatigue, and weakness persist at rest, inability to sleep and perform light duties. Not everyone goes through these stages in the same way. In fact, it may be difficult to say exactly when one stage ends and the next begins. The first pain is a signal that the muscles and tendons should rest and recover. Otherwise, an injury can become longstanding, and sometimes, irreversible. The earlier people recognize symptoms, the quicker they should respond to them.

Shoulder MSDs and their relationship to work risk factors have been reviewed by several authors (Hagberg and Wegman, 1987; Korana and Forcier, 1995; Sommerich et al, 1993; Winkel and Westgaard, 1992). (Hagberg and Wegman, 1987) attributed a majority of shoulder problems occurring in a variety of occupations to workplace exposure. (Kuorinka and Forcier, 1995) looked specifically at shoulder tendinitis and stated that the epidemiologic literature is "most convincing" regarding work-relatedness, especially showing an increased risk for overhead and repetitive work. Shoulder as work activities that involved cyclical flexion, extension, abduction, or rotation of the shoulder joint. Repetitiveness was defined in four different ways by observed the frequency of movements past pre-defined angles of shoulder flexion or abduction, number of pieces handled per time unit, short cycle time/repeated tasks within cycle and a descriptive characterization of repetitive work or repetitive arm movements.

Some of the studies that examined repetition as a risk factor for shoulder MSDs had several concurrent or interacting physical work load factors (Sakakibara et al, 1987). Studies that examined force or forceful work or heavy loads to the shoulder, or described exposure as strenuous work involving the shoulder abduction, flexion, extension, or rotation that could generate loads to the shoulder region were also included muscle activity, while deltoid muscle activity underwent a pronounced increase as the angle of shoulder flexion or abduction increased from 45 to 90 degrees (Herberts et al, 1984). As the arm is elevated, the space between the humeral head and the acromion narrows such that mechanical pressure on the supraspinatus tendon is greatest between 60 and 120 degrees of arm elevation (Levitz & Iannotti, 1995). While there is a continuum of severity from an included angle of 30 degrees to a maximally abducted arm, postures with shoulder abduction or flexion past 60 degrees are considered awkward posture. In compare, when a joint is in an awkward posture, the muscles have less strength. So if they have to produce the same amount of force, the muscles will be working closer to their maximum level. Fatigue will occur more quickly, And an awkward posture lead to MSD.

There is a relation between physical factor of repetition and elbow MSDs. Studies usually defined repetition, or repetitive work, for the elbow as work activities that involved cyclical flexion and extension of the elbow or cyclical pronation, supination, extension, and flexion of the wrist that generates loads to the elbow/forearm region.
For review it is included in a study that is examined force or forceful work or heavy loads to the elbow or described exposure as strenuous work involving the forearm extensors or flexors, which could generate loads to the elbow/forearm region (Mintz & Fraga, 1973).

Studies that addressed posture or examined workers in those activities or occupations that require repeated pronation and supination, flexion/ extension of the wrist, either singly or in combination with extension and flexion of the elbow have chance to being attacked by MSDs (Mintz & Fraga, 1973). Studies that addressed posture or examined

workers in those activities or occupations that require repeated pronation and supination, flexion/ extension of the wrist, either singly or in combination with extension and flexion of the elbow have chance to being attacked by MSDs (National institute of public safety and health, 1997).

Cyclical or repetitive work activities that involved either repetitive hand/finger or wrist movements such as hand gripping or wrist extension/flexion, ulnar/radial deviation, and supination or pronation may cause the MSDs (Stevens JC et al, 1992). Repetitive work is frequently performed in combination with external forces, and much of the epidemiologic literature has combined these two factors when determining association with CTS. There is evidence that force alone is associated with CTS. There is strong evidence that a combination of forceful hand/wrist exertion and repetitiveness are associated with CTS (Moore, 1992).

Nineteen studies reported on the results of the association between repetition and CTS. Several studies quantitatively measured (Moore, 1992; Chiang et al, 1990, 1993; Silverstein et al, 1987) or observed (Stetson et al, 1993; Nathan et al, 1988; 1992a; Barnhart et al, 1991; Osorio et al, 1994) and categorized repetitive hand and wrist movements in terms of: a)he frequency or duration of tasks pertaining to the hand/wrist, b) the ratio of work-time to recovery time, c) the percentage of the workday spent on repetitive activities, or d) the quantity of work performed in a given time (National institute of public safety and health, 1997).

Neck or head postures, adverse or extreme head or neck postures, or static postures of the head and/or neck can caused work related musculoskeletal disorder (Moore, 1992). Heavy physical work has been defined as work that has high energy demands or requires some measure of physical strength. Some biomechanical studies interpret heavy work as jobs that impose large compressive forces on the spine (Marras et al, 1995). Heavy physical work appeared to include other potential risk factors for back disorder, particularly lifting and awkward postures.

Lifting is defined as moving or bringing something from a lower level to a higher one. The concept encompasses stresses resulting from work done in transferring objects

from one plane to another as well as the effects of varying techniques of patient handling and transfer. Forceful movements include movement of objects in other ways, such as pulling, pushing, or other efforts. Several studies included in this review used indices of physical workload that combined lifting/forceful movements with other work-related risk factors (particularly heavy physical work and awkward postures). Some studies had definitions for lifting which include criteria for number of lifts per day or average amount of weight lifted (Nathan, 1992).

Bending is defined as flexion of the trunk, usually in the forward or lateral direction. Twisting refers to trunk rotation or torsion. Awkward postures include non-neutral trunk postures (related to bending and twisting) in extreme positions or at extreme angles. Risk is likely related to speed or changes and degree or deviation from non-neutral position (Pope et al, 1984). Static work postures include isometric positions where very little movement occurs, along with cramped or inactive postures that cause static loading on the muscles. In the studies reviewed, these included prolonged standing or sitting and sedentary work. In many cases, the exposure was defined subjectively and/or in combination with other work-related risk factors (National institute of public safety and health, 1997).

Different studies show about 50% of workers have been or will be affected by knee pains and complaints will be more frequent as the population ages and careers will be longer. The increase in prevalence depends on mechanical or morphological causes as well as psychosocial state and work organization. Lesions of the meniscus, well known for a long time, seem to be stable in the statistics of Social Security as well as the hygroma; the use of knee-pads (overalls with built-in cushions) is strongly recommended while working in kneeling or squatting position. The squatting or kneeling position extended for longer than one hour a day, often recovering from these two positions (more than 30 times a day), lifting or carrying heavy loads, often climbing (around 30 times per day) stairs or ladders. These gestures and postures are unavoidable in some jobs; in those cases, advices given by the specialist of occupational medicine and the ergonomist may improve or alter the habits of the worker or of his entire team (Part, 2009).

Foot pain is very common, especially in women, owing to inappropriate footwear. Overuse, repetitive strain and minor, easily forgettable injuries may result in chronic foot and ankle pain (Balint et al, 2003). Inflammation of tendons and/or tendon sheaths because of repetitive movements, often non-strenuous (Safety & Health Assessment & Research for Prevention, 2001). Irritation of the levator scapulae and trapezium, all muscles of the neck causes tightening of the muscles in the neck. Neck stiffness as well as headaches also presents. Headaches are often described as a pressure sensation around the head. Pain may build and intensify at the end of day (Safety & Health Assessment & Research for Prevention, 2001). Inflammation of tendons and/or a tendon sheaths of the fingers due to repetitive movements and griping too long, too tightly, or too frequently. So inability to move fingers smoothly, with or without pain (United Food and Commercial Workers International Union, 2008). Result inflammation of the bursa (sack-like cavity) between skin and bone, or bone and tendon. It can occur at the knee, elbow, or shoulder due to kneeling, pressure at the elbow repetitive shoulder movements. Characterized by pain and swelling at the site of the injury (Safety & Health Assessment & Research for Prevention, 2001). The heavy feeling, aching pain, stiffness in upper back and neck, due to overhead activity of arms in extended position (Safety & Health Assessment & Research for Prevention, 2001). DeQuervain's disease is one of the most common tendon disorders of the hand. It develops when the tendons on the side of the wrist and at the base of the thumb become irritated from repetitive bending of the wrist. DeQuervain's Disease can usually be diagnosed by using a simple test this involves closing the fist around the thumb and bending the wrist towards the little finger. A person with this disorder will feel acute pain or tensing of the tendons on the side of the wrist (Safety & Health Assessment & Research for Prevention, 2001). Rotator cuff tendinitis is the most common tendon disorder of the shoulder. Shoulder pain, Stiffness and also problem in reaching behind on upper back (Safety & Health Assessment & Research for Prevention, 2001).

This term issued to describe the condition caused by the pinching or squeezing of the nerves and blood vessels between the neck and shoulder. This can happen when work tasks require frequent reaching above the shoulder (Safety & Health Assessment & Research for Prevention, 2001). Pain fell in the low back, also referring into the hip,

buttock or one leg. The cause may be muscle strains or trigger points, instability due to weak postural muscles, hypomobile spinal facet joints, or degeneration or herniation of spinal disks (Quittan, 2002).

Physical therapy can reduce the recurrence of back pain and neck-shoulder Pain. In order to be effective, however, the exercise should include vigorous exercise. And be repeated at least three times a week (Pod niece, 2008). 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 your breath; exhale during exertion and inhale during relaxation. A program of strengthening, stretching, and aerobic exercises will improve your 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 (Healthy Back Exercises: Strengthen and Stretch, 2011).

Strengthening exercises 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. Adequate core strength that comes from abdominal and back muscles helps stabilize the spine, allows proper spinal movement, and makes it easier to maintain correct posture. Strong hip and leg muscles are important to perform proper lifting techniques and body mechanics. Flexibility is the ability to move arms and legs through their full range of motion. Stretching will help improve your flexibility. Adequate flexibility of tissues around the spine and pelvis allows full, normal spinal movement, prevents abnormal force on the joints and decreases the possibility of injury. Stretching also prepares muscles for activity; stretching should be done both before and after each vigorous workout to prevent muscle strain and soreness and to help avoid injuries. When performing flexibility exercises, stretch as far as you can and hold the stretch for 10 seconds and then ease back. Each stretching exercise should be performed slowly in both directions, with no sudden jerking or bouncing. Bouncing is more likely to injure or strain a muscle or joint (Healthy Back Exercises: Strengthen and Stretch, 2011).

Ergonomic recommendations for minimizing the risks of back injuries focus on improving working posture and equipment design. These include:
Alternate between sitting and standing to reduce postural fatigue and maximize postural variety, which helps to reduce static muscle fatigue.
When sitting or standing, don't lean forwards or stoop in an unsupported posture for prolonged periods. If you are sitting, sit up straight or recline slightly in a chair with good back support, and use a good footrest if necessary. If you are standing for prolonged periods try to find something to help you lean against.

Avoid having to reach awkwardly to equipment and work close to the patient. Keep the items used most frequently within a distance of about 20 inches (50 cm). Use assistants to help move equipment into this zone.
Keep elbows and upper arms close to the body and don't raise and tense the shoulders when working. Also, ensure that hand postures are not deviated because this could lead to wrist problems.

The optimal design of work provides tasks that can be per formed while maintaining a neutral range of postures. A neutral range of postures is not just one posture or position of a joint, but includes a range of postures where the muscles are at or near their resting length, and the joint is naturally aligned. Neutral ranges of postures are usually the most comfortable positions for our joints and can reduce the risk of injury (Ergonomics Risk Factors, 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.
Avoid long appointments where possible, or intersperse these with frequent short rest breaks in which you change posture and relax the upper extremities (Alan, 2008).
If your job involves spending long periods of time sitting, focus on correcting postural imbalances. Sit straighter, gently draw those shoulders back, stand up and walk around more and seek advice on work ergonomics.

Stretch your tight neck, shoulder, chest, lower back and leg (hip flexor and hamstring) muscles. Strengthen the weakened middle and lower trapezius and activate deep abdominal muscles. Avoid traditional sit-ups, as they may shorten hip flexors and perpetuate postural problems. Weight training should focus on balance and symmetry. Our body is made up of many tissues which act synergistically to balance us. Don't worsen this by strengthening already shorted muscles, such as the pectorals, possibly making lengthened muscles, like trapezoids, weaker (Heath and Matthew, 2007).

CHAPTER-III METHODOLOGY

3.1 Study design

This study aimed to find out the work related musculoskeletal disorders among the pediatrics therapists at CRP. For this reason a quantitative research model in the form of a cross-sectional design is used. Cross-sectional study is selected because in this way it is possible to identifying a defined population at a particular point in time .Through the cross-sectional study easily comparing results among those of different ages, gender, or ethnicity. In other hand Quantitative research method helps to use a large number of participants and therefore collect the data objectively through this way data was reduced to numbers for statistical analysis in order to draw conclusion (Hicks. 2000).

3.2 Study settings

As this is a survey on work related musculoskeletal disorders among the pediatric physiotherapists at CRP, so study site was in CRP hospital. Samples were selected according to the inclusion criteria.

3.3 Population

All pediatric physiotherapists at CRP were the population of this study.A population refers to the members of a clearly defined set or class of people, objects or events that are the focus of the investigation (Samantha, 2001).

Bailey (1997) claimed that a population is the total group or set of events to which hypothesis apply. The population shares a specific set of characteristics or criteria that have been established by the investigator. The criteria of study population are determined from a literature review and the goals for the study. Selection criteria were established gradually as the assumption and theoretical base of the study unfold.

3.4 Sample

35 samples were selected from the population for this study. All was pediatric physiotherapists of CRP.

Samantha (2001) claimed that sample is a group chosen or obtained from a much larger group- the population. A sample is a subset of the population that has been selected to participate in the project. Sample should represent the population as closely as possible. For survey research, it is better to get as many subjects as possible with the consideration of the size of the ideal population (Bowling 1997). Sometimes the sample size may be big and

sometimes it may be small, depending on the population and the characteristics of the study (Bailey 1997).

Hicks (2000) claimed that many researchers thought that it needs hundred people to participate in a survey. But this is not necessary to have crowds of people taking part in research as sample. There is no easy way of establishing the best size of sample since this decision depends very largely on the research which is being undertaken as well as on the investigator's knowledge of the relevant population's characteristics.

3.4.1 Sampling procedure

Sampling procedure for cross sectional study done by following equation-

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

Here,

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

P= *0.78*

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 35 pediatric physiotherapists as sample.

Samantha (2001) claimed that sampling is an important concept in research. Basically it is about how choose the people who will study or who will participate in research. Findings the appropriate number and type of people take part in study is called sampling (Hicks, 1999).

Samples that will be studied most easily, cheaply or quickly should be selected for the study by using convenience sampling procedure. Samples were taken by using convenience-sampling method due to the time limitation and also for the small size of population and as it was the one of the easiest, cheapest and quicker method of sample

selection. Convenience sampling is usually used for exploring complex issues: for examples, in economic evaluation, in complex evaluations of health states (Bowling, 1997).

3.4.2 Inclusion criteria

Both male and female pediatric physiotherapists were selected- In this study, the investigator wanted to explore work related musculoskeletal disorders among the pediatric physiotherapists at CRP.

- Subjects were selected from only CRP hospitals-Because this study focused on work related musculoskeletal disorders among the pediatric physiotherapists at CRP.
- All age group are selected- as there is objective of the study to explore the relationship between age and work related musculoskeletal disorders, so samples are selected from all age group.
- Subject who are willing to participate in the study- Otherwise they will not give exact information that is helpful to the study.

3.4.3 Exclusion criteria

Subjects who had major accident or major surgery in any part of the body-any major surgery or accident may caused pain or any discomfort in any part of the body which may not be WMRD. This can mislead the result of the study.

3.5 Method of data collection

In this study data were collected by both structured and semi structured mixed type questionnaire. Mixed type questionnaire include both open and close ended questions. Following that the investigator was gone to pediatric physiotherapists to take permission if they are interested in this study or not. Firstly, the investigator introduced him and the research project as well its purpose. Then investigator met with individual subject to find out if they were interested in participating. For data collection, the investigator used only English type of questionnaire but easiest wording. On the other hand the Bengali version about disease condition might be

difficult to understand than English. After that a date was fixed by the researcher to collect the questionnaire from the recipients. Survey usually, use questionnaires or interviews by which information is gathered (Hicks, 1999).

Semi-structured questions are open questions and with these questions there is less chance of uncontrolled bias. Semi structured schedules permit the investigator to ask questions out of order at appropriate opportunities during the study period. Structured questions are always closed questions and most frequently used in survey research design. The strength of structured questionnaire is the ability to collect unambiguous and easy to count answers, leading to quantitative data for analysis structured questionnaire involve the use of fixed (standardized) questions, batteries of questions, tests and scales which are presented to respondents in the same way, with no variation in question wording and with mainly pre-coded response choices (Bowling 1997).

Hicks (1999) claimed that open ended questions are those which allow respondents free range when supplying their answers. Open ended questions are most useful in dealing with complicated information when slight differences of opinion are important to know and closed questions allow the respondents only a limited choice of how to answer the questions (Hicks 1999). In close ended question, it gives respondents an easy way out and would rather force them into a positive or negative answer (Bailey, 1997). For survey research methods, it is one of the most valid approaches for collecting data (Hicks, 1999).

3.6 Questionnaire

Data was collected using a questionnaire on paper and the questions types were a mix of both structured and semi-structured questions. These questions were used to collect nominal and ordinal data for research findings and were setup sequentially. There

were questions relating to work related musculoskeletal disorders among the pediatric physiotherapists.

Questionnaire is a method of collecting information whereby subjects answer a set of questions usually predefined by the researcher (Hicks, 1999). Questionnaire must be kept in short that the respondent will finish it but long enough to obtain the desired information and the question should be sequenced in a logical order that they follow one another (Baily, 1997).

The survey technique using a specially advised questionnaire as it is highly appropriate way of conducting such a study (Hicks, 1999). Bowling (1997) claimed that a basic underlying of questionnaires is that researchers and respondents share the same theoretical frame of reference and interpret the words, phrases and concepts used in the same way. Hicks (2000) claimed that the value of questionnaire is largely governed by the skill of the question- setter, devoid of ambiguities and bias and to provide a comprehensive and appropriate answer structure. Too often respondents get irritated by answer formats which do not meet their needs and consequently they refuse to fill in their replies.

Bailey (1997) claimed that always enclosed the questionnaire in a stamped, addressed envelope. This will greatly increase the response rate. Make sure that cover letter tells the recipients why they should interested in the study and what benefits they can expects from participating.

3.8 Duration of Data Collection

The duration of data collection was approximately 04 weeks. Bailey (1997) claimed that self administered questionnaires are generally limited to 30 minutes. And always give a deadline for returning the questionnaire- approximately 2 weeks after it has been received. Research shows that recipients rarely return questionnaire after 2 weeks. Within four weeks the researcher conducted research with the participants and collected the data.

3.9 Materials

- Consent form.
- Questionnaire.
- Pencil and eraser.
- Page.
- SPSS (Statistical Package for the Social Sciences) software to analyze data
- Harvard Referencing 2010
- Computer.

3.10 Data analysis

The result of this survey was consisted of quantitative data. The collected data was illustrated with bar graphs. By this survey a lot of information was collected. All these results gave a basic idea about the work related musculoskeletal disorders among the pediatric physiotherapists at CRP. The results were calculated in percentages and descriptive statistics were presented, other statistical tests could not be used, as samples were small in number.

Data analysis is the process of systematically arranging and presenting information in order to search for ideas. The aim of the data analysis is to find out the meaning of the collected information. The study used descriptive statistics. Generally descriptive statistics are often used in conjunction with survey methods. However the three most commonly used form of descriptive are: Measure of central tendency and Measure of dispersion, bar graph, histogram, pie chart and frequency polygon (Hicks, 2000).

Bowling (1997) claimed that descriptive survey approach enables the researcher to gain an understanding of individual clients on certain issues and problems in clinical practice and from professional and managerial policy. It is very difficult to make any sense out of a large amount of information simply looking at the raw data. Bar graphs are typically used to present nominal and ordinal data. It presents data in a series of vertical rectangle, with each rectangle representing the number of scores in a particular category (Hicks, 2000).

3.11Ethical consideration

All the participants and authority will be informed about the purpose of the study, the process of the study and their written consent will be obtained. All the interviews will be taken in a confidential to maximize the participant's comfort and feelings of security. The researcher has permission from the research supervisor, physiotherapy Department. The researcher is to ensuring the confidentiality of participants' information, sharing information only with the research supervisor.

3.12 Informed Consent

Before conducting research with the respondents, it is necessary to gain consent from the subjects (Baily,1997). For this study interested subjects were given consent forms and the purpose of the research and consent forms were explained to the subject verbally. They were told that participation is fully voluntary and they have the right to withdraw at any time. They were also told 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.

3.13 Rigor

During the data collection and data analysis the author always tried not to influence the process by his own perspectives, values and biases. No leading questions were asked and judgments were avoided. When conducting the study the researcher took help from the supervisor when needed. The other researchers can use the results in their related area.

3.14 Limitation of the study

Though the expected sample size was 50 for this study but due to resource constrain researcher could manage just 35 samples which is very small to generalize the result for the population of the pediatric physiotherapist. There are a no literatures about work related musculoskeletal disorders among the pediatric physiotherapists in the perspective of Bangladesh so it is difficult to compare the study with the other research. The researcher was able to collect data only pediatric unit of CRP for a short period of time which will affect the result of the study to generalize population. The questionnaire was developed only through searching sufficient literature but considering the context of the demography of the population a pilot study would substantial before developing questionnaire.

CHAPTER-IV RESULTS

Interpretation of results

The aim to my research was to identify the common work related musculoskeletal disorders among the pediatric physiotherapists at CRP. Data were numerically coded and captured in Microsoft Excel to show the result, using an SPSS 16.0 version software program for analyze the data as descriptive statistics. The investigator collected the descriptive data and calculated as descriptive statistics as percentages and presented by using both pie and bar charts. 35 participants were chosen to estimate identify the common work related musculoskeletal disorders among the pediatric physiotherapists at CRP.

Prevalance of WRMD

After analysis researcher find that 32 (91.40%) participants out of 35 participants have suffered from work related musculoskeletal disorder (WRMD).

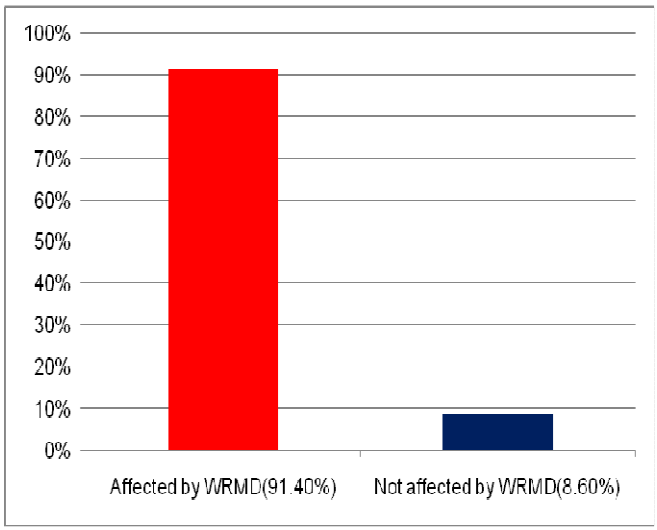

Figure 1: Prevalance of WRMD

Worked related musculoskeletal disorders

After analysis researcher found that among the 32 participants who have suffered from WRMD. Among them 13(40.6%) suffered in low back pain, 8(25.0%) suffered in neck & shoulder pain, 2(6.2%) suffered in upper back & neck pain, 5(15.6%) suffered in neck & back pain, 1(3.1%) suffered in knee & ankle pain & 3(9.4%) suffered in mechanical pain.

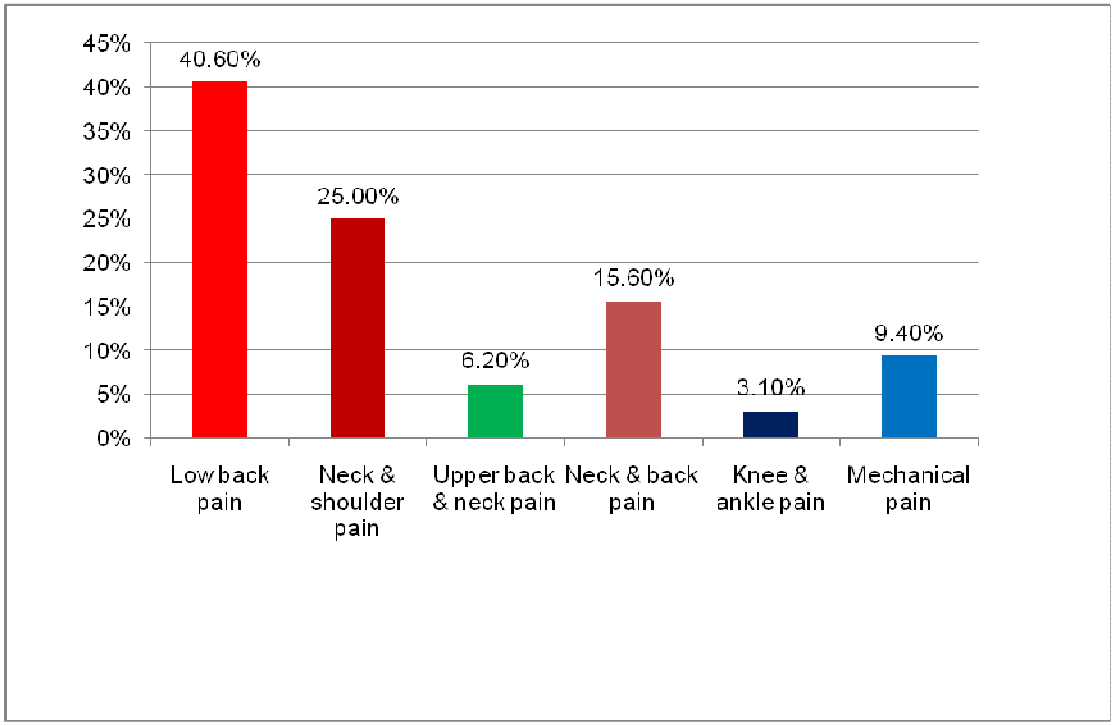

Figure 2: Worked related musculoskeletal disorders

Age

After analysis researcher found that among the 32 participants who have suffered from WRMD lowest age were 23 and highest age was 39 years. And frequency were 25.70% participants in between 20-25 years, 54.30% participants in between 26-30 years, 17.10% participants in between 31-40 years, 2.90% participants in between 36-40 years.

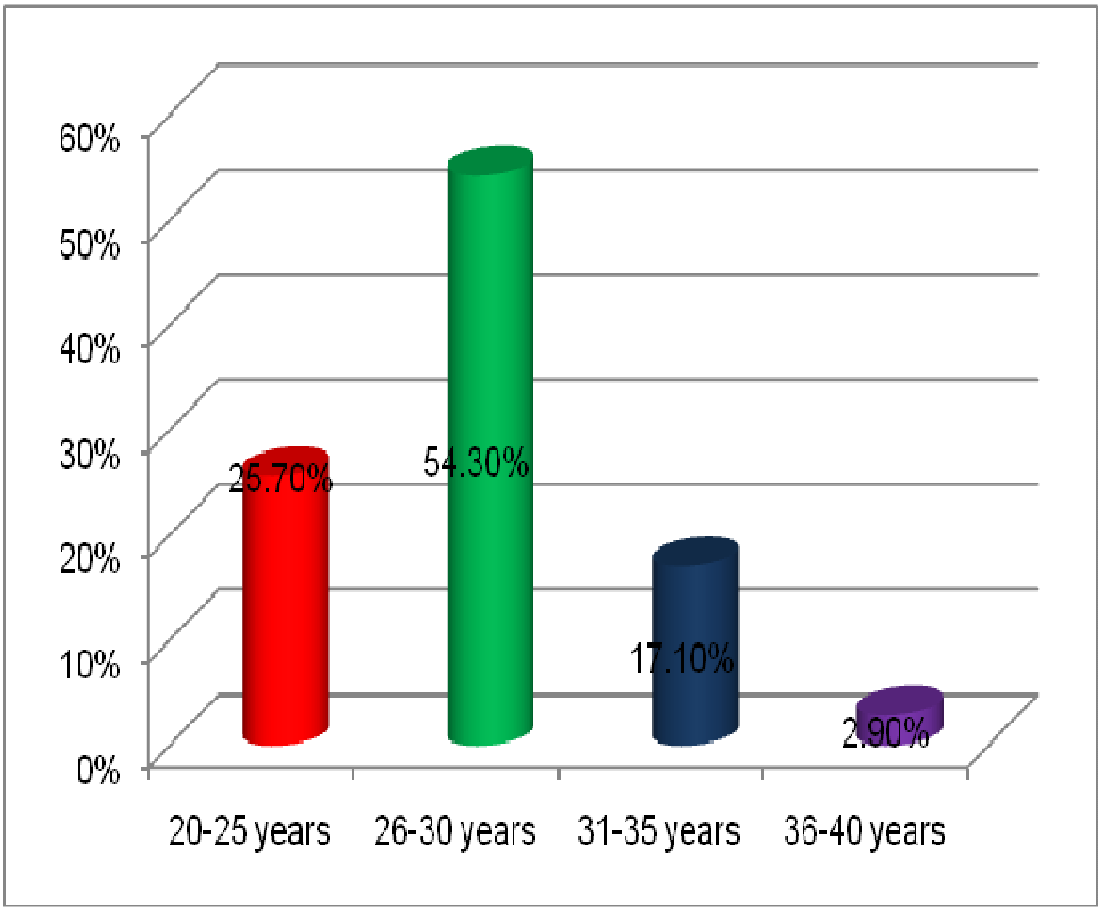

Figure 3: Age range of the participants

Weight

After analysis researcher found that among the participants the lowest weight was 54 kg and the highest weight was 103 kg. Analysis showed that 32 participants out of 35 participants who have suffered from WRMD 42.86% participants were in between 51kg – 60kg, 40.00% were in between 61kg -70 kg, 17.14% were in between 40 kg - 50kg.

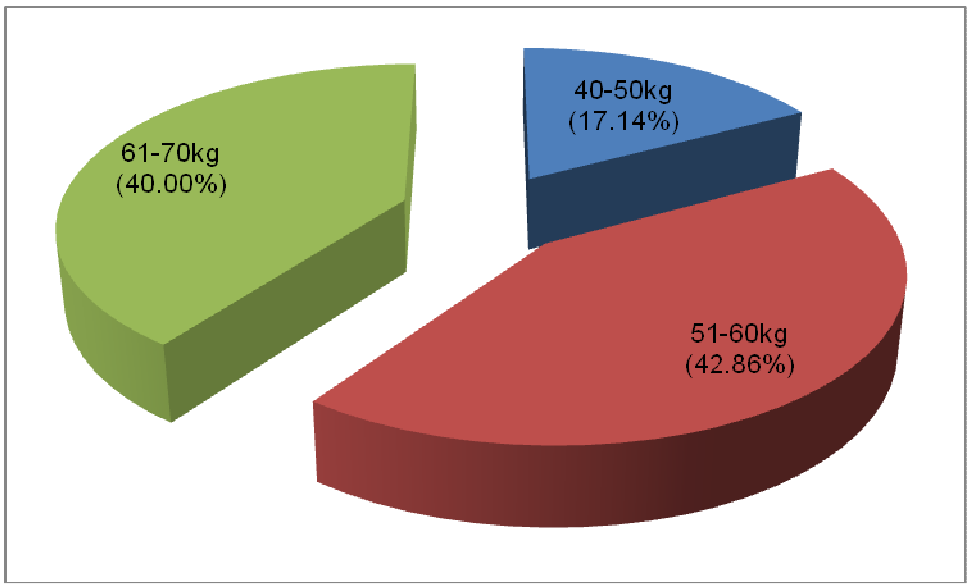

Figure 4: Weight of the participants

Sex

Analysis showed that among the 32 participants 15 were male and 17 were female. And among the 32 participants who were suffered from WRMD 15 (40%) were male and 17 (60%) were female.

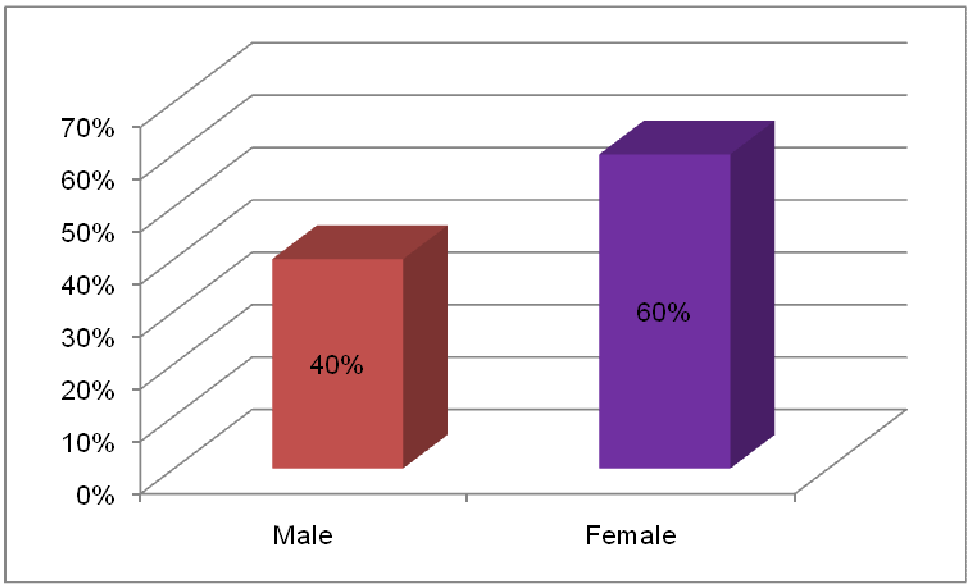

Figure 5: Sex of the participants

Symptoms

After analysis researcher found that 32 participants out of 35 participants who suffered from WRMD 3 (9.4%) participants suffered from aching, 5 (15.6%) participants have cramp, 2 (6.2%) have numbness, 1 (3.1%) has tingling, 20 (62.5%) have pain, 1 (3.1%) has stiffness. So most pediatric physiotherapist suffered from WRMD symptoms was pain.

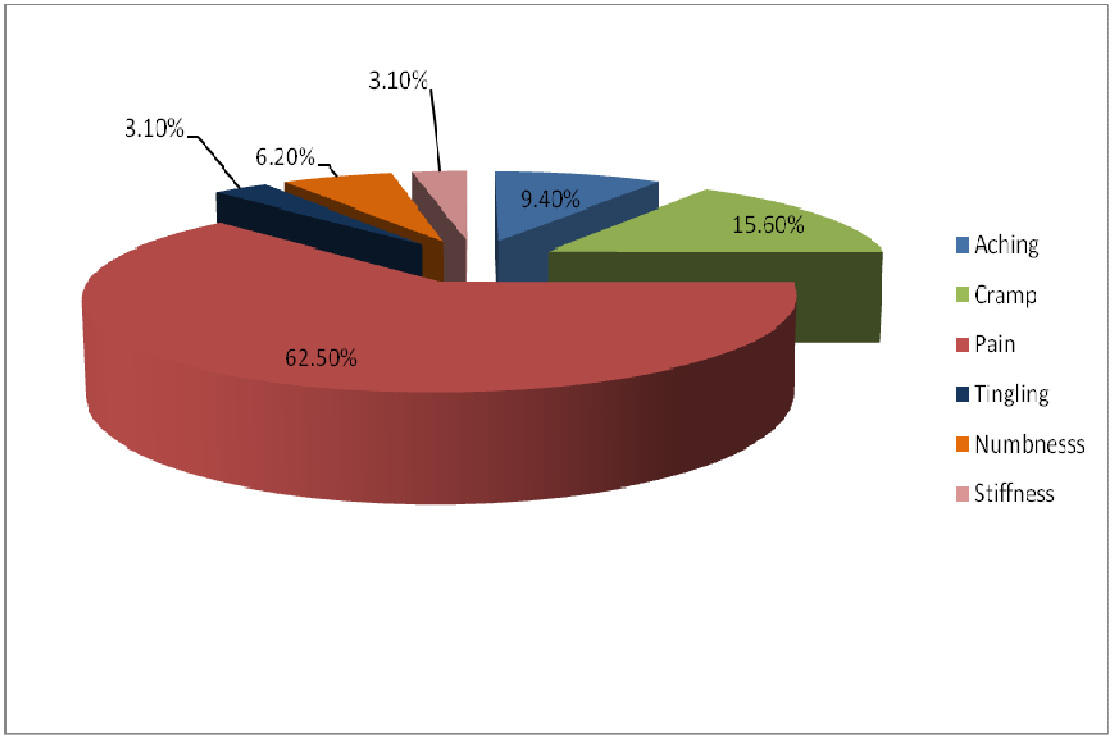

Figure 6: Symptoms of the participants

Stressful positions

Analysis showed that among the 32 participants who suffered from WRMD 18.8% participants stressful positions were performing same task over and over, 28.2% participants were working in awkward and cramped position, 37.5% participants were working in the same position for long periods, 12.5% participants were bending or twisting back or neck in an awkward way, 3.10% participant was not enough rest during the day. So most common risk factor were working in same position for a long period 37.5% and working in awkward or cramped position 28.20%.

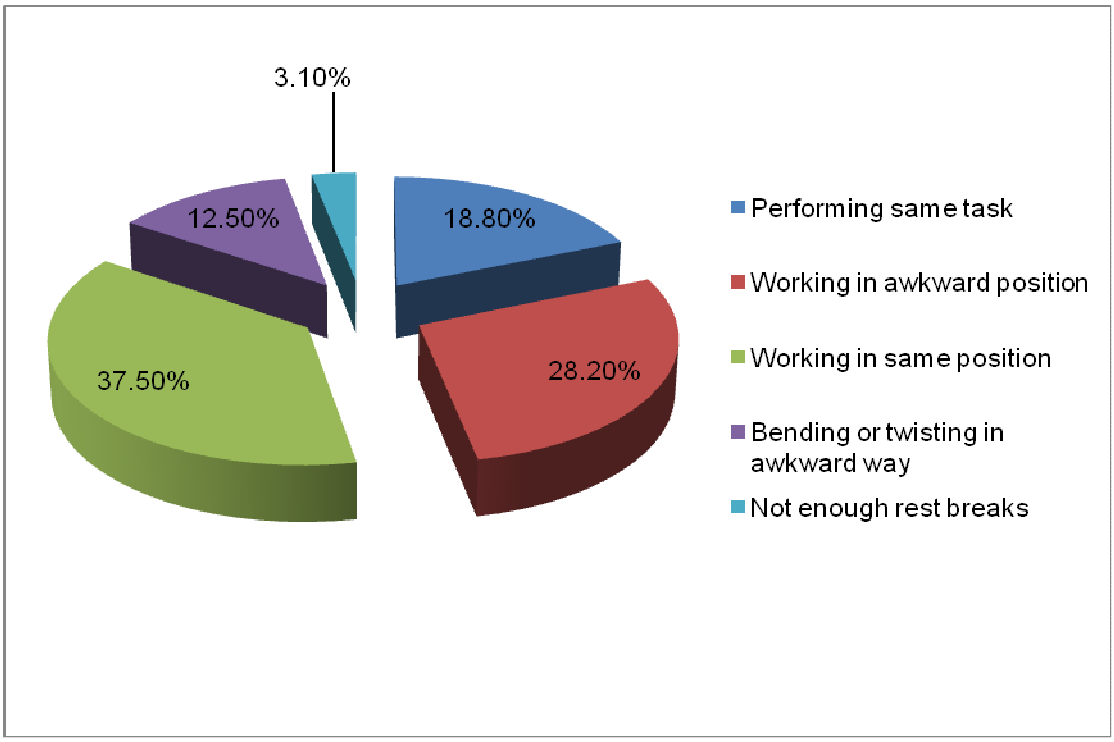

Figure 7: Stressful position

Diagnosis of condition

Analysis showed that 22 (68.80%) participants out of 32 participants have diagnosed their condition.

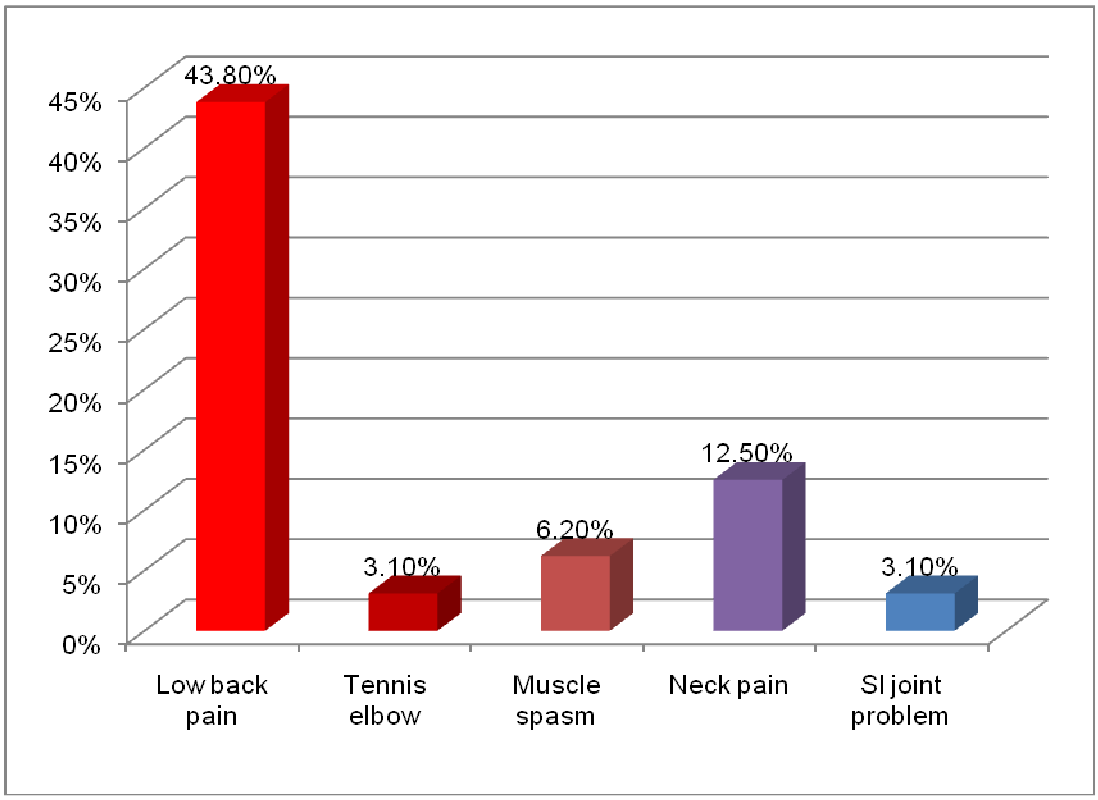

Figure 8: Diagnosis of condition

Affected body part of the participants

After analysis researcher found that among the 32 participants who suffered from WRMD most affected body parts were neck in 53.1% , upper back in 34.40% , lower back in 78.10%, shoulders 31.20% , elbows 15.60%, wrists 21.9%, buttocks/thighs/hips 6.20%, knees 18.80% & ankles/feet 11.40% participants.

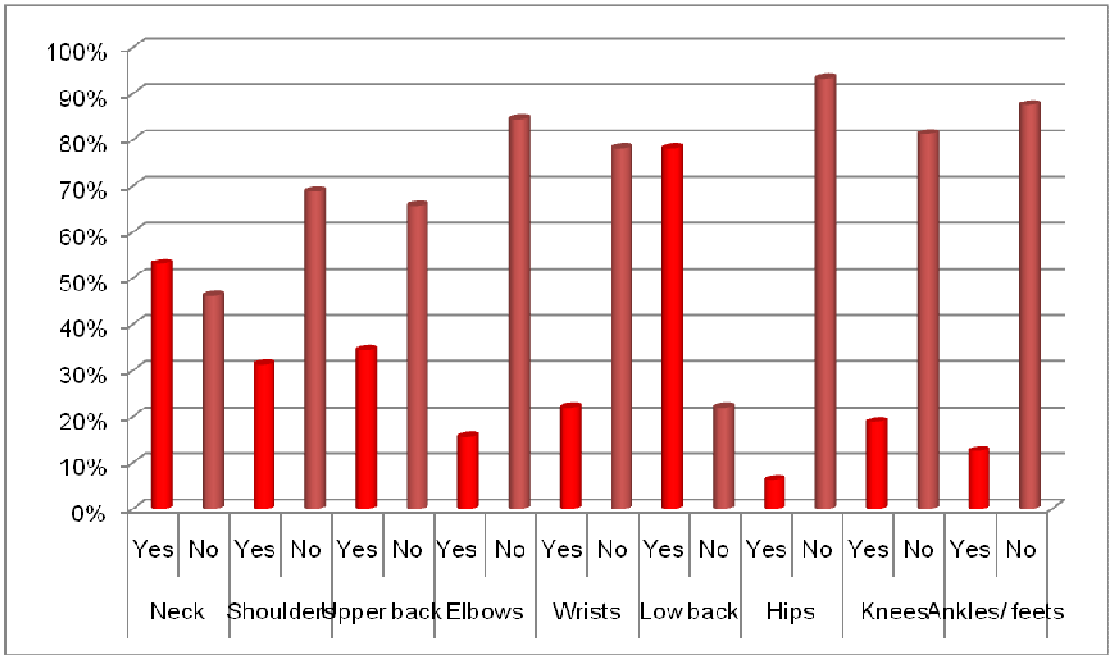

Figure 9: Affected body parts of the participants

CHAPTER-V DISCUSSION

This study examined identifies the common work related musculoskeletal disorder (WRMD) among the pediatric physiotherapists at CRP. This study found that among the 32 participants who have suffered from WRMD. Among them 13(40.60%) suffered in low back pain, 8(25.0%) suffered in neck & shoulder pain, 2(6.2%) suffered in upper back & neck pain, 5(15.6%) suffered in neck & back pain, 1(3.1%) suffered in knee & ankle pain & 3(9.40%) suffered in mechanical pain. So the greater number of the participants is suffered in low back pain. This result is comparable to Byron, E et al, (2012) showed that highest prevalence of WMD among physical therapists was in the following anatomical areas: low back (45%), wrist/hand (29.6%), upper back (28.7%), and neck (24.7%). The job factor rated most likely to contribute to job-related musculoskeletal disorders was "lifting or transferring dependent patients." The prevalence of WMD in physical therapists also was affected by work setting, practice specialty, age of patient, and gender of therapist.

Most frequent age range of participants (54.30%) has suffered from WRMD in between 26-30 years followed by (2.90%) participants 36-40 years. (Lotters et al. 2003) showed that 22% people in <35 years old were affected by WRMD, in between 35-45 years 30% people were suffered from WRMD and in >45 years old 48% people were suffered from WRMD. A statistics of (Health and safety executive, 2008) showed that the people in between 55-64 years are more suffered by WRMD.

A cross sectional study in Norway showed that obesity is associated with low back pain. It is also more common in males between the ages of 35 and 55 years old. (Samat A R et al. 2007). (European health and safety agency, 2003) showed that obesity is one of the individual's risk factor for WRMD(Bork BE et al, 1996) suggested that prevalence of WRMD is related with body weight when treating a patient.

Near about two third (60%) female participants showed greater prevalence of WRMD in pediatric physiotherapists at CRP. But literature says that men are more vulnerable to WRMD than female. In a research project that was published at 2009 by Adegoke et al. showed that 63.5% male and 36.5% female were suffered from WRMD at Nigeria. The statistics by (Health and safety executive, 2008) showed that male are more vulnerable to WRMD than and statistics is 2900 male in every 100000 males and 2400 females in every 100000 females. Female gender appears to be positively correlated with severity of musculoskeletal pain.

More than one third (37.5%) of the participants who suffered from WRMD common stressful positions were working in same position for a long period followed by working in awkward or cramped position (28.1%). Babatunde (2008) showed in his research that among the all risk factor performing excessive practice in one day (83.5%), working in same position for long period (71.3%), performing manual techniques (67.8%), working in awkward or cramped position (64.6%), bending or twisting back in awkward way (62.6%), not having enough rest break during the day (61.7%), continuing to work when injured (52.2%), performing same task over (52.2%) and inadequate training in injury prevention (29.6%). (Palmer, 2007) claimed that repetitive work, static loading are responsible for most of the WRMD. **(**Warren, 2005) found in his research the common risk factors were performing the same tasks over and over, working in the same position for long periods.

Musculoskeletal pain has been found to be a major health problem for pediatric physiotherapists at CRP and most affected body parts were neck in 53.10% participants, shoulders 31.20% participants, low back 78.10% participants, upper back 34.40% participant, hips/thighs/buttocks 6.20% participant, knees 18.80% participants and ankles/feet 12.50% participants.

CHAPTER-VII CONCULUSION

Identify the common WRMD among pediatric physical therapists at CRP were highest in the low back, wrists and hands, upper back, and neck. The job factor related most problematic for the physical therapists in our study was prolong floor sitting, perform same task over and over, working in awkward or cramped position, repetitive movement of upper & lower limb, Bending or twisting in neck & back in an awkward way, not enough rest breaks during the day, inadequate training in injury prevention. Although physical therapists have knowledge and clinical expertise in musculoskeletal injuries, these proficiencies do not constitute immunity to their own work-related musculoskeletal disorders. Thus, specific strategies should be developed to reduce WMD in the practice of physical therapy and to prevent potentially disabling conditions. The results of this study indicate that particular attention should be given to techniques for manual handling of patients and to hand-intensive manual therapy techniques. Further investigation is needed to develop preventive measures that presume the health of workers in an occupation devoted to the promotion and restoration of health. Nor Azlin M. et al., 2010 showed that Work-related injuries are significantly higher among the physiotherapists in Malaysia compared with many other countries. Female therapists reported a higher incidence of work-related musculoskeletal disorders in this study, and work-related musculoskeletal disorders were more common among therapists working in the pediatric specialty. This study contributes to the understanding of work-related disorders among physiotherapists from a south-east Asian perspective where the profession is in its development stage.

A recommendation evolves out of the context in which the study was conducted. The purpose of the study was to estimate the work related musculoskeletal disorders among the pediatric physiotherapists at CRP. Though the research has some limitations but researcher identified some further step that might be taken for the better accomplishment of further research. For the ensuring of the generalization of the research it is recommended to investigate large sample. In this study researcher only took the pediatric physiotherapist at CRP. So for further study researcher strongly recommended to include the pediatric physiotherapists from all over Bangladesh. In this study investigator only identified the common work related musculoskeletal disorders among the pediatric physiotherapist at

CRP, so it is recommended for further study to identify the work related musculoskeletal disorders among the pediatric physiotherapists.

Due to limitation of time investigator was not able to do pilot study. But pilot study is very much important for the validity of questionnaire. For this it is strongly recommended that if any further study will be done in this area then pilot study should be done to format the questionnaire.

Beside this in this study the ratio of male and female participants were unequal. So it is recommended for further study to take the participants equally for comparison of gender and work related musculoskeletal disorders.

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VERBAL CONSENT STATEMENT

(Please read out to the participant)

Assalamualaikum/Namasker, my name is Md. Mainul Islam shohag, I am conducting this study for a Bachelor project study titled "Work related musculoskeletal disorders among the paediatric physiotherapists at CRP" from Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some proposal and other related questions about musculoskeletal complaints. This will take approximately 20-30 minutes.

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

If you have any query about the study or your right as a participant, you may contact with Md. Mainul Islam Shohag, researcher and/or Ehsanur Rahman, Lecturer of Physiotherapy Department, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before I start?

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

YES ☐

NO ☐

Signature of the Interviewer _____

Signature of the Researcher _____

Questionnaire to identify the common work related musculoskeletal disorders among the pediatric physiotherapists at CRP .

Part- A: Personal details:

1. Name :
2. Age (as at last birthday) : _____
3. Weight (kg) : _____
4. Gender:

1. Male	2. Female

4. Department: _____

5. Job experience: _____

Part-B: Symptoms and risk identification

6. How many years you are working as a pediatric physiotherapist?

1. 0-2 years	2. 2-5 years	3. 5-10 years	4.>10 years

7. Have you ever experienced work-related musculoskeletal disorders in any part of your body?

1.Yes	2.No

8. What is the severity of your pain?

1. Mild	2. Moderate	3. Severe

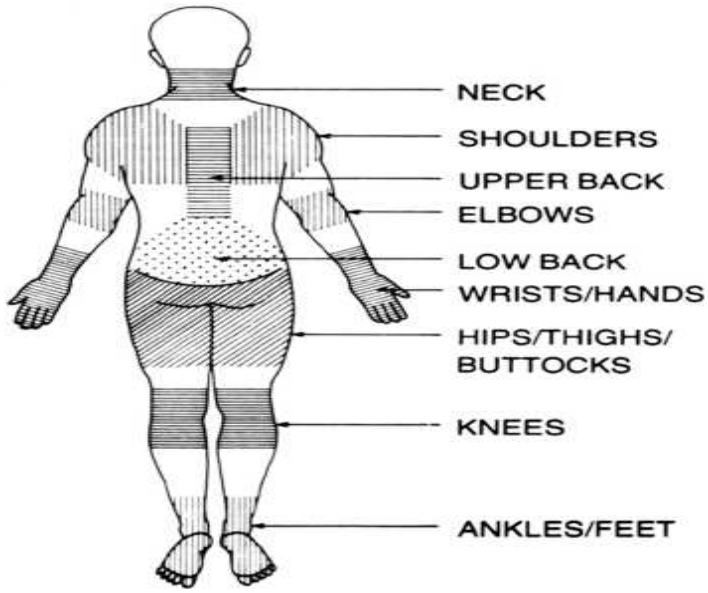
9. When did you first experience this work-related musculoskeletal disorder?

1. 0-1 year	2. 1-5 years	3. 5-15 years	4. >15 years	5. Don't know

10. What words best describe your symptoms? (Please give a tick on your answer)

1.Aching	2.Cramp	3.Pain	4.Tingling	5.Numbness	6.Stiffness

And please fill the body chart correctly:



11. What type of musculoskeletal pain you are suffering most?

_____

12. Did you stay away from work because of pain?

1.Yes	2.No

13. How long you were staying away from work?

1.0-5 weeks	2.5-10 weeks	3.>10 weeks

14. Had your working performance reduced due to pain?

1.Yes	2.No

15. This list describes factors that could contribute to work related musculoskeletal disorder. In your opinion, how have the following factors contributed to your work related musculoskeletal disorder? (Please give a tick on your answer)

1. Performing the same task over and over	2. Working in awkward or cramped positions	3. Working in the same position for long periods
4.Repetitive movements of upper limb	5. Bending or twisting your neck in an awkward way	6. Not enough rest breaks during the day
7. Continuing to work when injured or hurt	8. Work scheduling (over time, irregular shift, length of workday)	9. Inadequate training in injury prevention

16. Describe any factor at work that seems to make your symptoms worse:

.....

.....

17. Had you referred to the physician or other health professional due to pain?

1.Yes	2.No

18. Have you ever diagnosed your condition?

1.Yes	2.No

19. If yes, what was the diagnosis?

_____

20. What kind of treatment did you receive?

1. Medication	2. Physiotherapy	3.Surgery	4. Others

21. Mark the severity of your pain on the following scale (VAS scale)

0 ——————————————————————— 10

21. If yes. Then what was the result?

1. Improve	2. Worse	3. Unchanged

Thank you sir for your assistance