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Original Research Article

Ergonomics and Prevention of Occupational Musculoskeletal Disorders

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Abstract: ***Background*:** Occupations have psychological risk factors for musculoskeletal disorders and diseases. Many of them are preventable. Occupational strains are one of the preventive occupational risk factors. ***Objective*:** Introduction of musculoskeletal disorders and prevention, kinds, diagnosis and treatment. ***Materials and Methods*:** In a review study the author research in related scientific literature, websites and journals about the musculoskeletal disorders. Job musculoskeletal disorders and prevention, kinds, diagnosis and treatment. ***Results*:** Musculoskeletal disorders can be classified to neck, upper limbs, spine, lower limbs and rheumatologic disorders. But the prevention is important in the workplaces. ***Conclusion*:** Musculoskeletal disorders are important and recognizing the risk factors is important. Prevention is necessary.

Keywords: Occupation, Musculoskeletal Disorders, Prevention.

INTRODUCTION

Occupations have psychological risk factors for musculoskeletal disorders and diseases. Many of them are preventable. Occupational strains are one of the preventive occupational risk factors [1-3].

Musculoskeletal disorders are usually chronic disorders and named; Cumulative trauma disorders (CTD), Repetitive motion disorders (RMD), Repetitive strain injuries (RSI) and other related names [4, 5].

In other countries more than 1 million workers annually report taking time away from their works. Workers' compensation costs for these lost work days are in billions [6-8].

Medical management in musculoskeletal disorders is important and can cause; Eliminate or reduce symptoms, Prevention from progression of diseases, reduce the impairment and disability, keep the worker functional [9, 10].

In the medical management advise; Early reporting of symptoms, early access to health care providers and treatment, rapid modification of occupational risk factors, medical follow-up [11-13]. Other management is recommended; work site visit, cooperation between physicians and ergonomists, education, exercise and success is with; [14-16] knowledge about the awkward activities and body postures, introduction the ways for elimination these activities, exercises and physiotherapy [17-20].

METHODS

In a review study the author research in related scientific literature, websites, journals about the musculoskeletal disorders. Job musculoskeletal disorders and prevention, kinds, diagnosis and treatment.

In the scientific literature the musculoskeletal disorders are classified to rheumatologic disorders related to job, upper limbs musculoskeletal disorders related to work activities and awkwardness, spine disorders related to job and lower limbs diseases resulted from work activities. Ways for prevention are ergonomics modifications in the workplaces.

Diagnosis is by history and physical examinations, imaging and other diagnostic tests such as EMG-NCV. Treatment is important, work and worker need to treat.

RESULTS

Musculoskeletal disorders can be classified to neck, upper limbs, spine, lower limbs, rheumatologic disorders. But the prevention is important in the workplaces.

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Musculoskeletal disorders are in neck; cervical spondylosis, disc disorder, osteoarthritis.

Musculoskeletal disorders are in upper extremity; shoulder disorders; Rotator cuff disorders and biceps tendinitis, shoulder joint and acromioclavicular joint osteoarthritis, hand-arm vibration syndrome, carpal tunnel syndrome, cubital tunnel syndrome, ulnar tunnel syndrome, extensor and flexor tendinitis of the forearm, lateral and medial epicondylitis.

Rheumatologic disorders are osteoarthritis, rheumatoid arthritis, systemic lupus erythematosus, systemic sclerosis, fibromyalgia, gout, infectious diseases and osteonecrosis.

Musculoskeletal disorders are in back; low back pain, spondylolysis & spondylolisthesis, none specific low back pain.

Musculoskeletal disorders are in lower extremity; osteoarthritis of the hip, osteoarthritis of the knee, ankle sprains.

DISCUSSION

Musculoskeletal disorders are in neck; disc disorders, osteoarthritis, cervical spondylosis. These disorders have risk factors such as; extreme position of the head, carry loads in office workers, dentists, miners.

Musculoskeletal disorders are in upper limbs; shoulder joint osteoarthritis, it is related to work with high physical demand such as dentists, farmers [1, 2].

Acromioclavicular joint osteoarthritis has occupational risk factors; heavy lifting, working by tools with hand-arm vibration. It is more prominent than others in construction workers [19, 20].

Rotator cuff disorders and biceps tendinitis are from related muscles; supraspinatus, infraspinatus, subscapularis, teres minor, long head of the biceps brachii work relatedness is posture, force, repetition. These are more common than others in swimmers, tennis players and industrial workers. Injury of the tendon and impairment of perfusion and nutrition in addition to from mechanical stress [1, 4].

Risk factors are hand is kept one hour per working day at or above shoulder level or repetitive flexion or abduction more than 60 degrees. Management are conservative measures.

Other upper extremity disorders is hand-arm vibration syndrome (HAVS); It is related to local vibration exposure. It is diagnosed with spasms of digital arteries and Raynaud phenomenon. Damage peripheral nerve is also occurred.

The patients have numbness and tingling in fingers with skin color changes.

It is diagnosed by getting exposure history and physical examination in exposure to vibration or cold. This disease has treatment and preventive methods such as using new designed tools against vibration, warming hands, forbidden smoking and using minerals and milk in daily diet program, some drugs are recommended for examples Nifedipin and Prostaglandin E. [1, 6].

One of the important upper extremities disorders is carpal tunnel syndrome or CTS, it is more prominent in some works and jobs such as office workers, sewing, assembling, dentists, mechanics and others with awkward posture, force and strain at wrist. It has some none occupational risk factors for example in diabetes mellitus, hypothyroidism, renal failure, edema and trauma.

It had diagnostic criteria; symptoms, signs and relation to work. Treatment is work activities modifications. Splint for treatment is useful and recommended.

Ulnar nerve disorders at the elbow and wrist are important too and must be prevent and treat. These are seen in office workers and workers who work by hand tools.

Tendinitis of the thumb is more prominent in workers than others, because of repetitive movement of thumb for example in washing.

Osteoarthritis of hand joints is occurred in some jobs by awkward posture and force at joints [19, 20].

Rheumatologic disorders are important in workers for example rheumatoid arthritis, systemic lupus erythematosus, systemic sclerosis. These are may be related to occupational exposures such as silica, hydrazine, vinyl chloride.

Fibromyalgia is a rheumatologic disorder with previous trauma.

Infectious diseases are brucellosis and Lyme disease by work exposure occurred.

Osteonecrosis from decompression sickness is appearing in severe cases.

Spine disorders for example low back pain is from many causes such as disc disorder, spondylolysis and spondylolisthesis, none specific low back pain (NSLBP) that has not specific etiology more than soft tissue injury specially muscles in para spinal tract [1, 4].

Lower extremities disorders such as osteoarthritis of the hip, osteoarthritis of the knee and ankle sprains. Ankle sprains are more prominent in working situations than other sprains.

Prevention is necessary by ergonomics modifications in the workplaces and offices. Cooperation between physicians and ergonomist is very important in this situation for treatment of the workers and workplaces or tools. Occupational health center must be attention to management of musculoskeletal disorders in the workplaces.

CONCLUSION

Musculoskeletal disorders are important and recognizing the risk factors is important. Prevention is necessary.

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