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Survey of Musculoskeletal Disorder Faced By Dentists

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Abstract—In dental clinics, there are very few activities that can cause sudden injuries, rather it is an accumulation of harmless working positions over months and years, which are repeated so often that they cause irreversible injuries Musculoskeletal disorders / Repetitive Strain Injuries (MSDs /RSIs) and the signs, symptoms and risk factors of these types of injuries, so that one can be aware of developing problems and can change his /her approach to work or alter the workstation setup to prevent further injury. The article discusses the important issues of posture and offers different exercises to work with comfort, efficiency and ease. This includes many different concepts such as how dentists position themselves and their patients, how they utilize equipment, how work areas are.

Key Words— Ergonomics, MSD (Musculoskeletal Disorder), Dentists

I. INTRODUCTION

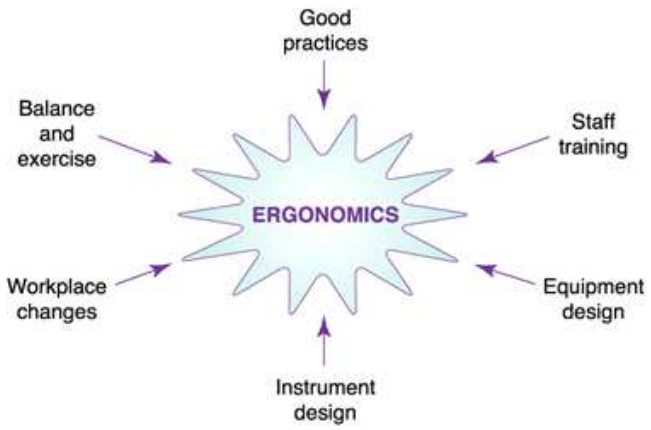
.Dentistry is a social interaction between helper and recipient in their limited job setting and with personal characteristics. A healthy dentist is one of the most important component in a successful dental practice. Despite the fact, that though 88% of dentists report good or excellent health (Kupcinskas & Petrauskas, 2003), some studies show that one out of ten dentists reports having poor general health and three out of ten dentists report having poor physical state (Gorter et al, 2000). Dentists can, and do experience illnesses and problems that can disrupt or impair a practice. Yet, there are growing evidences that suggest increased vulnerability within the profession to certain disorders and afflictions that can only be categorized as practice related.

Occupational health hazards are common in many sectors and are on the increase. Musculoskeletal disorders (MSDs), which are problems of musculoskeletal system, are significant and costly workplace problems affecting occupational health, productivity and the careers of the working population. Musculoskeletal diseases, including pain, weakness and parasesthesia, are reported to be associated with wide range of occupations

These problems can be avoided by increasing awareness of the postures used during work, redesigning the workstation to promote neutral positions, examining the impact of instrument use on upper extremity pain, and following healthy work practices to reduce the stress of dental work on the practitioner's body (Jabbar, 2008).

In Greek, "Ergo," means work and, "Nomos," means natural laws or systems. Ergonomics, therefore, is an applied science concerned with designing products and procedures for maximum efficiency and safety. It is also a study of the relationship among the personnel, equipment and environment in the work area. Proper ergonomic design is necessary to prevent repetitive strain injuries, which can develop over time and can lead to long-term disability. Ergonomics is concerned with the efficiency of persons in their working environment. It takes account of the worker's capabilities and limitations to ensure that tasks, equipment, information and the environment suit each worker (Kahri, 2005).

Recently, "Ergonomics" has become a popular term. The term has been used with most professions but increasingly in the dental profession. It is a discipline that studies workers and their relationship to their occupational environment. This includes many different concepts such as, how dentists position themselves and their patients, how they utilize equipment, how work areas are designed and how all of this impact the health of dentists (Russel, 1973).



The musculoskeletal health of dental professionals has been the subject of numerous studies worldwide, and their focus has been on the pain experienced by the practitioner.

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Because their work area is narrow, dental treatment is performed, in a very inflexible work posture. Studies indicate that back, neck and shoulder or arm pain is present in up to 81% of dental operators (Bramson et al, 1998).

Back pain is the most common complaint followed by neck pain and shoulder pain, though they all are usually mild. Most dentists today work in the sitting position and treat the patient in the supine position. Being seated made little difference in how frequently operator experience pain. When operators sit, pain occurs not only in their back, but also in their neck, shoulders and arms. While the occasional backache or neck ache is not a cause for alarm, if regularly occurring pain or discomfort is ignored, the cumulative physiological damage can lead to an injury or a career ending disability (Valachi & Valachi, 2003).

II. MUSCULOSKELETAL DISORDER

Many studies in the past have focused on the prevalence of musculoskeletal disorders among dentists. Ergonomics is an applied science concerned with designing products and procedures for maximum efficiency and safety.

MSDs are injuries and disorders of the musculoskeletal system. The musculoskeletal system includes muscles, tendons, tendon sheathes, nerves, bursa, blood vessels, joints/spinal discs, and ligaments. MSDs may be caused or aggravated by the presence of one or any combination of the following risk factors: repetition, awkward or static postures, high forces, and contact stress. When these factors exist simultaneously, the risk of developing a MSD is significantly increased.

Some Symptoms of Musculoskeletal disorders (MSDs):

- Excessive fatigue in the shoulders and neck
- Tingling, burning, or other pain in arms
- Weak grip, cramping of hands
- Numbness in fingers and hands
- Clumsiness and dropping of objects
- Hypersensitivity in hands and fingers

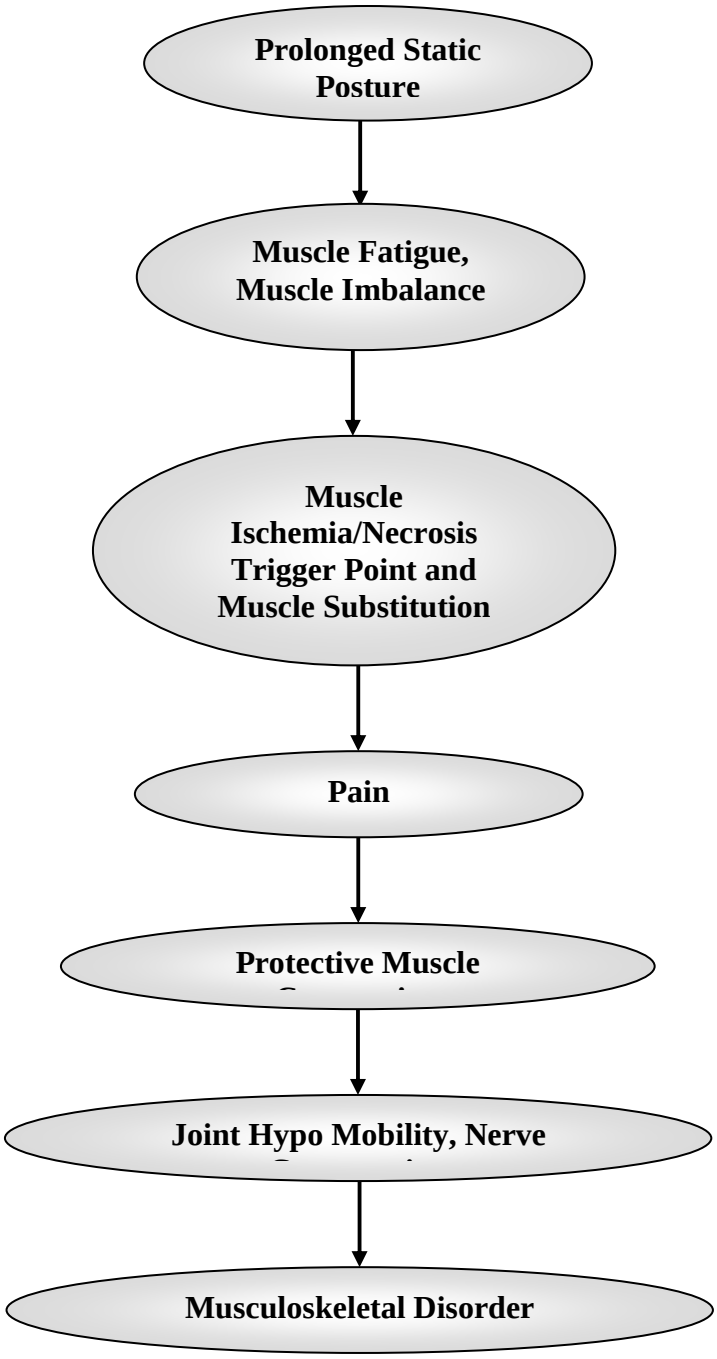
Some Signs of MSDs:

- Decreased range of motion
- Loss of normal sensation
- Decreased grip strength
- Loss of normal movement
- Loss of co-ordination

Some Risk Factors for MSDs:

- Repetition
- Forceful exertions
- Awkward postures
- Contact stress
- Vibration
- Poorly designed equipment workstation
- Improper work habits
- Genetics
- Medical conditions
- Poor fitness level
- Physical/mental stress
- Lack of rest/recovery
- Poor nutrition
- Environmental factors
- Poor lighting

Mechanisms Leading to Musculoskeletal Disorders:



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Off-the-Job activities that can *contribute* to MSDs:

- Home computer use
- Repetitive activities using the fingers
- Sports activities
- Prolonged/awkward postures at home
- Use of household tools
- Activities involving repeated heavy lifting, bending, twisting, or reaching

III. MSD'S IN DENTAL SURGEONS

A. Upper Back pain

You may experience upper back pain as localized tightness, throbbing, aching or sharp pain in the thoracic area of your back or in your neck. It can also be experienced as radiating pain in your arms, numbness, tingling or weakness in your arms, headache, or pain in your jaw or occipital area. Because the ribs are attached to the thoracic spine, you may also feel pain when taking a deep breath.

The common causes of upper back pain stem from inflammation and micro-tears in the muscles, tendons and ligaments of the upper back or from arthritis, herniated disks, vertebral stenosis, or misalignments in the thoracic or cervical spine. Repetitive motions and stressful postures, over time, may lead to the development of or aggravation of soft tissue damage or degenerative changes in the spinal column.

B. Lower back pain

Low back pain may include aching, throbbing or stiffness in the lumbar and sacral areas of the back, and may also be experienced as sharp and piercing pain. It may also be experienced as numbness, tingling and /or shooting pain radiating down the back of the legs and into the feet and toes, or as weakness in the hips, legs, feet or toes.

The cause of low back pain can be varied and complex But very common sources of pain are tiny tears and inflammation of the muscles, tendons and ligaments supporting the spinal column, and pressure on nerve roots from vertebral changes, such as herniated discs, narrowing of joint spaces, and/or stenosis of the vertebral canal or foramen. There are also times when the cause of the pain is not known and this is often referred to as non-specific low back pain.

C. Neck pain

Repetitive neck movements and continuous arm and hand movements affecting the neck and shoulder demonstrate significant associations with neck MSDs. Neck pain is related to spine and muscles.

D. Hand pain

Hand pain may include throbbing, aching, numbness and tingling, stiffness or diminished strength. Performing dental procedures in which you use your finger, thumb or wrist muscles frequently or for prolonged periods of time can lead to or aggravate conditions that cause hand pain.

IV. APPLICATION OF ERGONOMICS IN DENTISTRY

- Reducing the Risk of MSD
- Increase Productivity
- Increase Safety
- Improve the Quality of Work
- Decrease Fatigue and Error

V. CONCLUSION

Prevention of chronic pain requires that dentists have more knowledge, change their habits, select proper ergonomic equipment, and have a break after each operation with stretching exercise. In doing so, exercise plays an important role in their career to be healthy, safe and have a longer career. Further studies are necessary to find out new dental instruments compatible with ergonomic and to reduce musculoskeletal disorders.

VI. REFERENCES

[1]. Ergonomics – Work Smart, Be Safe!! By Abhishek K.N, Jithesh Jain, Sneha C. Khanapure, Shilpa M,20-11-2013
[2]. Ergonomics Application to dental practice by Shipra Gupta, 2011
[3]. "Musculoskeletal Disorder in Dentists" by Maryam Rabiei, Maryam Shakiba, Habibolah Dehgan Shahreza, Mohamad Talebzadeh-2011
[4]. Ergonomics In Dental Practice by Walid Sadig 2000
[5]. "Ergonomics In Dentistry-A Review " by Ramachandran Sudarshan, Sree Vijayabala Ganesan 2012
[6]. Evaluation Of Ergonomics And Efficacy Of Instruments In Dentistry By Nina Nevala, Erja Sormunen and Kimmo Suomalainen
[7]. Ergonomics In General Dental Practice by Priyanka Airen Sarkar and Anand L Shigli 2011
[8]. Posture Evaluation Of Dental Students by Mohammed K. Yousef and Afnan O. Al-Zain 2009
[9]. Ergonomics:A Must for Dentistry: A Cross Sectional Study in various part of Northern India by Vela Desai, Prerna Pratik and Rajeev Sharma
[10]. Tooth Erosion Awareness in a Brazilian Dental School,
a. Ana Paula Hermont, B.D.S.; Patrícia A.D. Oliveira, B.D.S