

“IGNORANCE IS NOT BLISS : MUSCULOSKELETAL DISORDER AMONGST DENTAL SURGEONS : A SYSTEMATIC REVIEW

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ABSTRACT:

An ounce of prevention is better than ponds of cure....That's what dental health care workers spend their day telling their patients, but it also applies to working condition that can cause pain in the neck, shoulder and hand to a dentist. Despite numerous technical advances in recent years, dental surgeons are susceptible to the development of health disorders due to bad working habits, repetitive tasks and uncomfortable posture contribute to musculoskeletal disorders (MSD'S), stress and loss of production. Thus article provide a brief review of MSD in clinical dentistry and possible correlation between these symptoms, working positions and actions and their prevention.

Keywords: MSD(musculoskeletal disorders),PSP'S(Prolonged static syndrome)



INTRODUCTION:

Dentistry is a demanding profession involving high degree of concentration, precision, static, procedure performing extremely precise procedures.^[1,2] Nearly 2 million workers suffer from procedure MSD each year due to repetitive awkward and stressful motions ^[3,4] of MSD dramatically. Each professional dentist tends to develop imbalance in specific muscles, in order to maintain a balanced posture, while 50% of their body's muscles are made to contract to hold the body motionless the awkward positions .muscular imbalance, neuromuscular inhibition repeated unnatural deviated and inadequate working postures forceful hand movements inadequate equipments improper workplace designs and work pattern are likely to be particular risk

factors /However MSD'S are unavoidable part of dental surgeons. ^[3, 5,6,7,8]

MSD has an impact not only on the physical but also on the psychological and social aspect of the practitioners .^[9,10] It is characterized by presence of discomfort ,disability and persistent pain in the joint ,muscles, tendons and other soft parts caused or aggravated by repeated movements and prolonged forced body posture ^[11].MSD result in more than 60% of all newly occupational injuries.^[11-12] The result is injure to muscles, nerves and tendon sheaths of the back, shoulders ,neck, arms, elbows ,wrists and hands that can cause loss of strength ,impairment of motor control ,tingling numbness or pain ^[13-19].

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 [20]

MSD seen in Dental Surgeons [21]

1. Carpel tunnel syndrome: It's a painful disorders of the wrists and hand caused by compression of the median nerve within the carpel tunnel of the wrists cause due to poor posture and continuous pinch-gripping an instrument without resting the muscles. [21]

2. Ulnar Nerve Entrapment: It is painful disorders of the lower arm and wrists caused by compression of the ulnar nerve of the arm, caused by bending hand up, down or from side to side and holding the little finger a full span away from the hand. [21]

3. Pronator Syndrome: It is a painful disorder of the wrist and hand caused by compression of the median nerve between the two heads of the pronator teres muscles. It is caused by holding the arm away from the body. [21]

4. Tendinitis: A painful inflammation of the tendons on the side of the wrists and at the base of the thumb which is caused due to hand twisting, forceful gripping bending the hand back or to the side. [21]

5. Tenosynovitis: A painful inflammation of the tendons on the side of the wrists and at the base of the thumb. [21]

SIGNS AND SYMPTOMS OF MSD: [20]

A. signs:

- Decreased range of motion

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

B. symptoms:

- 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

MECHANISM OF MSD'S IN DENTISTRY:

Prolonged Static Postures (PSPs): When the human body is subjected repeatedly to PSPs, it can initiate a series of events that may result in pain, injury or a career-ending MSD. [20]

Muscle Ischemia/Necrosis and Imbalances: During treatment, operators strive to maintain a neutral, balanced posture and find themselves in sustained awkward postures. These postures often lead to stressed and shortened muscles which can become ischemic and painful, exerting asymmetrical forces that can cause misalignment of the spinal column. [22]

Hypomobile Joints: During periods of PSPs or when joints are restricted due to muscle contractions, synovial fluid production is reduced and joint hypomobility may result. [20]

Spinal Disc Herniation and Degeneration: In unsupported sitting, pressure in the lumbar spinal discs increases. During forward flexion and rotation, the pressure increases further and makes the spine & disc vulnerable to injury.^[22]

Neck and Shoulder Injury: Repetitive neck movements and continuous arm and hand movements affecting the neck and shoulder demonstrate significant associations with neck MSDs.

Carpal-Tunnel Syndrome (CTS): It has been associated with both repetitive work and forceful work. Symptoms can appear from any activity causing prolonged and increased pressure (passive or active) in the carpal canal.^[23]

Low Back Pain: Low back discomfort has been associated with dental work in numerous studies.

Psychosocial Factors: Dentists with work related MSDs show a significant tendency to be more dissatisfied at work. They are burdened by anxiety, poor psychosomatic health and thus feel less confident with their future.^[23]

CONCEPT OF NEUTRAL POSITION FOR THE CLINICIAN

Research indicates that about 80% of dental clinicians complain of pain in the upper body and back. This musculoskeletal pain is often the direct result of the body positioning and movements made by dentist in daily work. Neutral positions the ideal position of the body while performing work activities and is associated with decreased risk of musculoskeletal injury.^[22]

| Position | Features |
|----------------------------|--|
| Neutral Seated Position: | Forearm: parallel to floor Weight : Evenly Balanced Thighs: parallel to floor Height: low enough so that dentist able to rest the heels of your feet on the floor |
| Neutral Neck Position: | Head Tilt: 0-15 degree Eye Line: as near to the vertical as possible Head tipping- Forward Avoid head tipping to one side |
| Neutral Back Position | Lean forward from the waist or hips and trunk flexion of 0 to 20 degree. Avoid over flexion of spine. |
| Neutral Shoulder Position | Shoulder: Maintain in horizontal position and evenly balance the weight when seated. |
| Neutral upper arm Position | Maintain upper arm parallel to long axis of torso and elbows at waist level. Avoid greater than 20 degree abduction away from the body. |
| Neutral forearm Position | Forearm should be kept parallel to the floor and can be raised or lowered accordingly by pivoting the elbow joint. Angle between upper arm and forearm should be less than 60 degree. |

CONCLUSION:

Overall, this review clearly demonstrates that MSD represent a significant burden for the dental profession. The high prevalence of musculoskeletal pain in the upper extremities is a concern for the occupational health of dentists. Available research supports the idea that musculoskeletal problems can be managed or alleviated effectively using a multifaceted approach that includes

preventive strategies, proper selection and use of positioning techniques and frequent breaks with stretching techniques. It's important that dentistry incorporate these strategies in to practice to facilitate balanced musculoskeletal health that will enable longer, healthier carriers, increase productivity, provide safer workplace and prevent musculoskeletal disorder.

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