ERGONOMICS IN DENTISTRY: BETTER LATE THAN NEVER - REVIEW ARTICLE

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ABSTRACT

Work related musculoskeletal disorders are one of the most common health problems among the dentists and the most common reason for early retirement from dentistry because in dentistry, clinically, working field is confined to a very small area (oral cavity). Ergonomics is highly relevant to preventive and occupational medicine, management of musculoskeletal injuries and rehabilitation. The objectives of this study were to assess the knowledge and practice towards Ergonomics and Musculoskeletal Disorders (MSDs) among dental population.

Keywords- Ergonomics, Msd, Posture, Dentistry.

I. INTRODUCTION:

Ergonomics is derived from Greek words: Ergon meaning ‘work’ & Nomos meaning ‘principles or laws [6]. It is an approach to work smarter by designing tools, equipments, work stations which can allow practitioners to work with maximum efficiency and safety. Proper ergonomic design leads to enhanced productivity, minimizes injuries & maximizes worker satisfaction. Therefore, it is crucial for upcoming dental practitioners to adopt proper ergonomic design while practising dentistry. Ergonomics can be defined as ‘an applied science concerned with designing and arranging things people use so that the people and things interact most efficiently and safely’

The term work-related musculoskeletal disorders (MSDs) refers to musculoskeletal disorders to which the work environment contributes significantly or to musculoskeletal disorders that are made worse or longer lasting by work conditions or workplace risk factors. Common examples of such workplace risk factors include jobs requiring repetitive, forceful or prolonged exertions of the hands; frequent or heavy lifting, pushing or pulling, or carrying of heavy objects and prolonged awkward postures. The level of risk depends on the intensity, frequency and duration of the exposure to these conditions.

Good working ergonomics is essential so that work capability, Efficiency and high clinical level of treatment can be maintained throughout the working life of dental professionals. The scope of ergonomics in dentistry is large: it ranges from chemistry between the dental team to lighting, noise and odor conditions and naturally to the used equipment and software. The treatment environment with the patient chair, dental unit, operating light, dynamic and hand instrumentation, cabinet and peripheral equipment must be flexible. They need to adapt and guarantee good working postures, sufficient lighting and easy access to required instrumentation and materials for different working practices, clinical procedures and patient types.

Researchers have found symptoms of discomfort for dental workers occurred in the (Anton, 2002) Wrists/hands (69.5%) Neck (68.5%) Upper back (67.4%) Low back (56.8%) Shoulders (60%).

Classification of MSDs

(A) Nerve Disorders: Carpal tunnel syndrome, ulnar neuropathy.

(B) Disorders of the neck: Tension neck syndrome, cervical spondylosis, cervical disc disease, Brachial plexus compression.
(C) Disorders of the Shoulder: Trapezius malign, Rotator cuff tendonitis, Rotator cuff tears, & adhesive capsulitis.

(D) Disorders of the Elbow, Forearm & Wrist: deQuervains disease, Tendonitis, Tenosynovitis, Epicondylitis.


(F) Disorders of the Back: Low back pain (LBP), Upper back pain Examples of Musculoskeletal Disorders (MSDs)

Mechanisms causing musculoskeletal disorders (MSDs) in dentistry

- Prolonged static postures (PSPs)
- Muscle imbalances
- Muscle ischemia
- & necrosis Hypo mobile joints
- Spinal disc herniation
- & degeneration Neck
- & shoulder injury Carpal-tunnel syndrome (CTS)
- Low back pain
- Goals of Ergonomics reducing the risks of musculoskeletal disorders (MSDs).

Some elements of an improper workstation setup (Sadig, 2000)

Dentist’s or patient’s chair is too high/low.

- Dentist’s chair has no lumbar, thoracic, or arm support
- Instrument table is not positioned properly.
- Lighting is inadequate for the task.
- Edges of tables/work surfaces are sharp/uncomfortable.
- Ventilation makes workspace cold.
- Work environment is damp & cold.

For prevention of musculoskeletal disorders following points need to be considered

- Handling of instruments
- Handling of equipments
- Work postures
- Work close to your body.
- Minimize excessive wrist movements
- Avoid excessive finger movements.
• Alternate work positions between sitting, standing & side of patient. Adjust the height of your chair & the patient’s chair to a comfortable level. Consider horizontal patient positioning.

• Check the placement of the adjustable light.

• Check the temperature in the room

Recent trends & strategies in Ergonomics in Dentistry Four handed dentistry

Akesson et al. in their study noted that practice of four handed dentistry proved to be significant in reducing stress. When working in four-handed dentistry the dentist maintains a position around the operating field with limited hand, arm & body movement, and should best confine eye focus to the working field. The dental equipment & instruments should be centred on the dental assistant promoting over-the-head & over-the-patient delivery system.

Alternate between standing & sitting. Standing allows reducing the pressure in the back. However, there are times when the dentist needs to sit. When sitting, the main part of the body weight is transferred to the seat. Alternating between the two positions lets one group of muscles rest, while the workload is shifted to another group of muscles. Alternating between standing & sitting can be an effective tool in preventing injuries.

A foot control can be designed with a pedal on which the foot is placed either entirely, or partly. Placing the whole foot on the pedal causes an unfavourable load which results in the unequal position of the right & left foot which in turn causes an asymmetrical, harmful strain on pelvis & vertebral column. Therefore, it is necessary to place the heel on the floor so that it can support the foot, while the front part of the shoe is placed on the pedal. Using matt surfaces. The surfaces of dental equipment & instruments have to be matt, to avoid fatiguing glittering effects on the eyes of the dentist. The colours used for dental equipment should be light for an optimal contrast to avoid more adaptation of the eyes4 that allow better access during procedures.

II. CONCLUSION

The key for dental clinicians for staying healthy and fit is to adopt an ergonomic position all the times and adopting yoga/exercise in their daily routine thus preventing them from developing MSDs. Faculty in the institutions are required to teach these principles on ‘need for dentist’s health’ basis rather than just as a curriculum since BDS first year so that prevention of MSDs can be implemented at primary level.

REFERENCES