

Insights of Ergonomics for Musculoskeletal Disorders and Dentistry

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DESCRIPTION

Dental practice involves mental and physical concentration and an intense work schedule can lead to incorrect work postures. This situation leads to several musculoskeletal disorders. These disorders are also called as cumulative trauma disorders. These disorders can be simple injuries such as pain in the spine, back pain etc. Several complex injuries such as Tenosynovitis, DeQuervain's disease etc. can also occur due to these musculoskeletal disorders.

Ergonomics is derived from the Greek words "ergon" and "nomos". The word "ergon" refers to work and the word "nomos" refers to natural laws [1]. It is a study where it describes on how the humans use their body for performing several works or tasks especially on maximum comfort, safety, as well as productivity. It is commonly defined as applied science related to the structural and handling of works done by several individual persons.

The term ergonomics was coined by Hywel Murrell, a British psychologist. Ergonomics helps Modifying tasks and tools to meet users' needs rather than forcing them to adapt to the task or tool. In order to avoid these injuries, dentists must consider ergonomic principles. Many risk factors are involved with musculoskeletal disorders. The most common risk factors are prolonged static posture as well as cumulative trauma. Cumulative trauma includes scaling and polishing (repetitive motions), repeated exposure to non-functional and non-ground desk edges or non-padded hard or sharp objects which are called as contact stresses, etc. It mostly causes tear on tendons and nerve tissues. Human body is helpful and is deliberated for movements. A dentist maintains a posture which necessitates most of the body muscles to contract to resist gravity. Overload on muscles causes decrease of blood flow and it increases pressure on joints and bones. When the age increases, several changes will occur such as reduction of reflexions in muscles and nerves, ability to work more will decrease etc. Signs and symptoms of musculoskeletal disorders includes reduced grip strength, movement loss, sensation loss, neck fatigue, deformity, arm pain, clumsiness etc.

The main motto of ergonomics is to enhance the work quality, reduction musculoskeletal disorders risks, development of productivity, reduction of fatigue, enhancing comfort of work, etc. Work postures [2], instrument handling [3] as well as equipment handling [4] are the three important things to be concerned to reduce these musculoskeletal disorders.

Correct posture is very important. The human spine is made up of four natural curves. They are cervical lordosis, thoracic kyphosis, lumbar lordosis, sacral kyphosis. Bad posture increases the wear and tear on the intervertebral discs, muscles, ligaments, and vertebrae and causes pain. The anterior or rotated position increases the pressure on the intervertebral disc, which leads to a flattening of the lumbar spine. Because the spine is only attached to the muscles and the ligament is not attached to the bone, continuous forward flexion increases strength in the lower back. This causes muscle tension and painful trigger points. Sitting with your thighs parallel to the floor will cause your pelvis to move back and flatten the curve of your lower back. This increases disc pressure and muscle tension. Correct working posture is very important to keep the cervical lordosis in shape a stable position maintaining a neutral position supports musculoskeletal balance without compromise on the part of the doctor.

On the basis of a famous phrase "do no harm at first", Musculoskeletal disorders are common among dentists. A possible prevention is to consider the ergonomics of the designed work area, the sitting posture and the instruments in everyday life. One must practice yoga to improve work efficiency. Identifying risk factors is a primary thing to be considered. Awareness programs should be promoted *via* dental training programs, workshops among dentists.

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