The term ergonomics is derived from "Greek" words "ergon" and "nomos" in which "ergon" means work and "nomos" means natural laws. Thus, Ergonomics is a study of how the human body can be best used for maximum comfort, efficiency, safety, and productivity. It’s the study of human performance and work place design in order to maximize health, comfort and efficiency. Occupational Safety and Health Administration (OSHA) refers to the word Ergonomics as “the scientific discipline concerned with the understanding of interactions among humans and other elements of a system, and the profession that applies theory, principles, data, and methods to design in order to optimize human well-being and overall system performance.”

Ergonomics is highly relevant to preventive and occupational medicine, management of musculoskeletal injuries and rehabilitation. It helps people understand their limitations within the working area and helps them to find out the way to perform safely, effectively, and comfortably within the working environment.

Every dentist is of different built, and has a different level of strength. Contrary to that most of the workstations, machines, tools and equipment are designed without consideration of ergonomic principles. This is very important that dentists should know how to consider the ergonomics principles while designing and setting up the dental clinic.

Work related musculoskeletal disorders are one of the most common health problems among the dentists because in dentistry clinically, working field is confined to a very small area (oral cavity). Dental work requires very precise force application while delivering oral health. For the same, dentist uses a fixed posture that causes occupational hazard for dentist. Moreover, inappropriate operator’s position and patient’s position, while treating the patients on dental chair along with prolonged working hours may lead to multiple occupational hazards specially work related Musculo skeletal disorders (MSDs) among dentist population.

**Risk factors for MSDs**

* repetition of any task
* excessive force exertion
* lack of rest between patient work
* in appropriate operator’s position and posture
* vibrations from dental equipment/instruments
* improper illumination
* poor physical fitness
* inappropriately designed tools and dental work stations

There are few factors that may increase a dentist’s probability of developing an MSD. Some predisposing factors are –

* age
* rheumatoid arthritis,
* renal disease,
* hormonal imbalances,
* diabetes,
* hypothyroidism
* excessive weight
* genetics.
* non-work risk factors like hobbies and other activities e.g. knitting, crocheting, bowling, computer use, excessive driving

**Signs and Symptoms of Musculoskeletal Disorders**

* Decreased range of motion
* Deformity
* Decreased grip strength
* Loss of muscle function
* Pain in arms
* Numbness in hands and fingers
* Tingling, Burning, Cramping and Stiffness in arms or fingers.

**Types of Musculoskeletal disorders**

* **Back Problems**
  + **Lower back pain** (it can be due to involvement of surrounding muscles, ligaments, facet and sacroiliac joints, intervertebral discs, nerve roots, and bony periosteum.)
  + **Upper back pain** (most commonly its muscular, other reasons may be ligaments, intervertebral discs and bony periosteum)
* **Neck and Shoulder disorders (Cervical spondylosis, thoracic outlet syndrome)**
* **Hand and Wrist Problems (Tendinitis/Tenosynovitis, DeQuervain’s Disease, Trigger Finger, Carpal Tunnel Syndrome, Guyon’s Syndrome)**

**Prevention/managements of MSDs**

In general there are few factors to be considered as per the International Standards Organization (ISO #6385) which are-

* Adapt workspace and equipment to account for operator
* Provide sufficient space for body movements.
* Provide variety in tasks and movements to avoid static muscle tension caused by postural constraints.
* Avoid extreme posture when exerting high force

Other Interventions for Consideration in the Dental Practice.

* Exercise caution in purchasing equipment
* Early identification and treatment of MSDs
* Correct Posture and stools
  + Avoid bending the body as far as possible
  + Maintain a neutral, balanced position of neck and shoulder
  + Elbow should be held close to the operator’s body at a 900 angle
  + Wrist should be held straight and never be bent.
* Correct Patient/dental chair positioning
  + Dental chair/patient should be positioned as per the are of work in oral cavity.
* Appropriate Lighting and magnification (use of eye loups)
* Regular exercise/yoga (specially pertaining to shoulder, neck, lower back and wrist)

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