



Importance of Ergonomics in Dentistry

Sarwar A F M*

Department of Children, Preventive & Community Dentistry, Dhaka Dental College, Mirpur-14, Dhaka, Bangladesh

1. Editorial

Globally there is an alarming increase the work related stress in every field. Dentists are exposed to many occupational hazards which if neglected can result in some staid long-term ergonomical problems [1]. The popular [2] terms 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 [3]. A successful oral and dental health practice [4,5], fully depends on the health of dentists, if he or she suffers from Musculo Skeletal Disorders (MSDs) due to ergonomical hazards, definitely the outcome of the practice would be decreased and can negatively affect on social and economical status [6]. According to International Labor Organization (ILO) defines ergonomics as 'the application of human biological sciences in conjunction with the engineering sciences to achieve the optimal mutual adjustment of man and his work, the benefits being measured in terms of human efficiency and wellbeing [7] i.e the science of designing the job to fit the worker, rather than physically forcing the worker's body to fit the job [8] and not fit the job to the workers. In Greek, "Ergo," means work and, "Nomos," means natural laws or systems [1,2,9]. So that the working position of the dentists and their patients are very important because how they use instruments, how work areas are designed and how all of these affects the health of dentists³¹. It is known that the oral and dental profession is going through a wide range of occupational hazards include MSDs which are responsible for the detrimental effect of the oral health care and is common amongst dental surgeon due to their restricted working field [10,11]. So risk factors for work related MSDs [12] in oral health includes stress, poor flexibility, improper positioning, infrequent breaks, repetitive movements, weak postural muscles, prolonged awkward postures and improper adjustment of equipments. Common examples of such workplace risk factors include jobs requiring repetitious, cogent, or prolonged exertions of the hands; frequent or heavy lifting, pushing or pulling, or carrying of heavy objects and prolonged awkward postures [4,6], and all of thesesituations are contribute to musculoskeletal disorders (MSDs), stress and loss of production [13-15]. 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 equipments and workstation. Improper work habits. Genetics. Medical conditions. Poor fitness level. Physical/mental stress. Lack of rest/recovery. Poor nutrition. Environmental factors. Poor lighting. Some Elements of an Improper Workstation Setup: Dentist's or patient's chair is too high/low. Dentist's chair has no

Received Date: 15 Sep 2018

Accepted Date: 15 Oct 2018

published Date: 22 Oct 2018

Citation: Sarwar A F M (2018) Importance of Ergonomics in Dentistry, Universal Journal of Dentistry and Oral Diseases. Vol (1): Issue (1): 1-2.

*Corresponding author: Sarwar A F M, Department of Children, Preventive & Community Dentistry, Dhaka Dental College, Mirpur-14, Dhaka, Bangladesh, E-mail: drsarwarbd@gmail.com

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 and cold. Importance of posture: The elements of an improper workstation setup force the dental practitioner to assume many harmful postures when performing various procedures on the patient. These positions put pressure on nerves and blood vessels, cause excessive strain on muscles, decrease circulation and cause wear and tear on the joint structures. Some Improper Postures That Dentists Take: Working with the neck in flexion and tilted to one side. Shoulders elevated. Side bending to left or right. Excessive twisting. Forward bending/overreaching at waist. Shoulders flexed and abducted. Elbows flexed greater than 90°. Wrists flexed/deviated in grasping. Thumb hyperextension. Position maintained for 40+ minutes per patient. Some Tips for Working With Good Posture (a) Maintain an erect posture: (b) Use an adjustable chair with lumbar, thoracic and arm support: (c) Work close to your body: (d) Minimize excessive wrist movements: (e) Avoid excessive finger movements: (f) Alternate work positions between sitting, standing and side of patient: (g) Adjust the height of your chair and the patient's chair to a comfortable level: (h) Consider horizontal patient positioning: (i) Check the placement of the adjustable light [2,4,16]. For the dentist it is difficult to avoid awkward position of wrist and hand during most of dental procedures. Dentists work require small precise movements of fingers and hand, and use their thumb and middle finger in precision gripping [17,18,19]. Ergonomics seeks to reduce cognitive and physical stress, prevent occupational diseases related to the practice of dentistry and to improve productivity, with better quality and greater comfort for both the professional and the patient [20]. So finally it can be conclude that ergonomics are the science to stabilize a safe, healthy and comfortable working environment in the dental office, thereby preventing health problem and improving productivity [10].

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