

Parameters for Ergonomic Evaluation of the Dental Workstation: a contribution for ergo-design.

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Summary

The deficient approach of the ergonomics in dentistry courses and an ergonomic inadequacy of the workstations are determinant to the postural problems of the professionals in this area. The recommendations for design, production and selection of dental equipment present in the ISO/TC-106/SC-6-N-411, support more comprehensive studies for an ergonomic evaluation and ergo design of the dental workstations.

Keywords: ergonomics, design, dental equipment.

The dentist's work

Dentist's postural complaints in dental practice are well-known discussion objects. Provoked initially by the working position, more specifically due to the adoption of inadequate postures during the patient's treatment, the skeletal muscle pains that happened in dental practice is issue of study, above all, in the ergonomics area.

Objectives

With the aim of contributing for amplification of the scientific knowledge in this area we have as purpose to create subsidies to study the dental equipment in the line of the ergonomics, by means of the identification of the present factors in the dentist's activity, that they interfere direct and indirectly in that activity, pointed in mentioned International Standards. These factors constitute the evaluate requirements of the dental workstation that will guide the general lines so that the process of development of an ergonomic evaluation begins addressed to the dental work place. We presume that will available the basic tools to a contribution for ergo-design.

Stages of Ergonomic Intervention

The definition of the standard healthy postural for dentists offers the necessary bases for the ergonomic intervention, described by Moraes and Mont'álvão (2000). This process involves the ergonomic design, and that fundamentally leans on the ergonomic evaluation can be divided in the following great stages showed in the Table 02.

Table 01. Magnitude of ISO/TC 106/SC 6N411.

ISO/TC 106/SC 6N411	
Target-public	Applications
Designers and dental equipment manufacturer	To be able to meet the standards for working without damaging the health of the users, according to EU legislation and in relation to the CE mark;
Dentists	For evaluation and selection of dental equipment;
ISO and CEN	For developing new standards;
European Society of Dental Ergonomics	To promote the use of the "Requirements" and to discuss the many topics that still have to be fully developed;
Team practices, institutions, dental schools, policymakers etc.	As a guideline for selecting dental equipment in a considered good way;
Dental associations and insurance companies	To be able to support dentists with respect to preventing occupational diseases;
Creating Knowledge base	A basis for training dental students and dentists to work without health damaging;
Dental depots	When providing information for dentists.

Table 02. Ergonomic Intervention (Moraes and Mont'álvão, 2000)

Ergonomic Intervention (Moraes and Mont'álvão, 2000)	
Stage	Description
Ergonomic Appreciation	Constitutes the exploratory phase, which understands the mapping of the ergonomic problems of the context in subject. It consists of the systematization of the man-task-machine system and in the delimitation of the ergonomic problems relative to postural, informational, job, cognitive, communicational, interactional, displacement, movement, operational, space, physical and environmental aspects;
Ergonomic Diagnosis	Allows to deepen the prioritized problems and to test predictions. In agreement with the focus of the work, they are made the analysis macro-ergonomic and/or the analysis of the task of the man-task-machine systems
Ergonomic design	Aim to adapt the workstations and equipment and tools to the user's physical and cognitive characteristics. It includes the determination of exact arrangement and the interaction of interfaces, of the subsystems and components instrumental information, triggering, communication, of interaction, instruction, movements, spaces and physical-environment
Evaluation, validation and/or ergonomic tests	Return the arguments and proposals and project's alternative to the user. Comprehend simulations and evaluations through test's models
Ergonomic specification and Optimization	Comprehends the project revision after its evaluation

Final Remarks

Elaboration of an ergonomic evaluation protocol regard to the dental workstation is an important demand for the ergonomics. Particularly in relation to the performance of the ergonomic design which presents qualified to assist to dental equipment manufactures. By this means, the identification of the evaluation factors pointed in ISO/TC 106/SC 6 N 411 offers the basic information to begin the process of elaboration of this protocol addressed by the described general guidelines.

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