

Postural and Muscle Fatigue Analysis of Endodontic Residents

Study Protocol

February 2024

STUDY PROTOCOL

Objective: evaluate the working position adopted during an endodontic procedure and to determine the perception of symptoms of musculoskeletal disorders in first and second year students of the Master in Advanced Endodontics at the European University of Madrid (UEM), using the standardised Nordic Kuorinka questionnaire supplemented by a form with socio-demographic variables

Desing: The study was a descriptive observational cross-sectional study, the data were collected by means of surveys, during from March to May 2024.

The unit of analysis was the 1st and 2nd year students of the Master's Degree in Endodontics of the European University of Madrid (UEM), who had completed the two years of the annual teaching period of clinical practice during the years 2022/24.

Subjects previously diagnosed with a musculoskeletal disorder, with musculoskeletal congenital disorders, who had suffered previous trauma affecting the musculoskeletal system, pregnant women in their third trimester and subjects who refused to participate in the study were excluded.

Methods: The sampling was non-probabilistic by convenience, 10 trainees were included during the two years of training, treating 30 patients (3 patients per trainee) during the 1st year and another 30 patients in the 2nd year (22 months in total). A video camera was used to record the procedures from 3 different angles with a time no longer than 5 minutes (2 lateral views (right and left) and a frontal view) in the different patients following the National Institute for Occupational Safety and Health (NIOSH). Video recording protocol for workstation analysis and risk factor assessment. Camera position was standardized for all recordings. The video recordings were evaluated by Rodgers muscle fatigue analysis (RMFA) and rapid upper extremity assessment (RULA). The endodontic act to be selected would be exclusively upper or lower 1st molars during the opening and ultrasonic search of the 4th canal in upper 1st molars or the search of the mesiocentral in lower 1st molars. The questionnaire was administered in printed form to all students with prior informed consent, preserving the principles of autonomy, beneficence, justice and non-maleficence. The measuring instrument was the standardized Nordic Kuorinka Musculoskeletal Symptom Perception Questionnaire. The data from the questionnaires were compiled in a spreadsheet program (Microsoft Excel); measures of central tendency and dispersion were calculated as well as tables and figures. Sociodemographic variables such as age, sex, course, weight, height, symptoms of musculoskeletal disorders, body regions affected and times of symptom onset were recorded.