Ministry of Higher Education
& Scientific Research
University of Baghdad
College of Dentistry

Selected Salivary Biomarkers in Relation to Work-related Musculoskeletal Disorders among a Group of Dentists in Baghdad City

A thesis submitted to the council of the College of Dentistry/University of Baghdad in partial fulfillment of the requirements for the degree of Master of Science in Preventive Dentistry

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2016 A.D. 1438 A.H.

Abstract

Background: Work-related musculoskeletal disorders represented an important occupational health issues among dentists. Biomarkers of tissue damage as a result of occupational physical demands may be used for future detection of work related musculoskeletal disorders.

Aims: To assess work- related musculoskeletal disorders, physical work load index, tooth wear index, selected salivary biomarkers (Creatine kinase and C - reactive protein) and to find the relation among these variables among a group of dentists in Baghdad city.

Subjects and Methods: The number of dentists participated in the current study that took part in Bagdad city were 112 of both gender and aged between 40-45 years. They should fitted the study criteria. Self-administered Standardized Nordic questionnaire were used to evaluate musculoskeletal complaints. Physical work load was evaluated by using physical work load index. Tooth wear was evaluated by using tooth wear index. Stimulated saliva were collected from subsample (87) dentists drawn randomly from the total sample, for whom biochemical analysis (measurement of Creatine kinase and C - reactive protein) were done.

Results: in the current study low back and neck complaints were the most complaint experienced by the dentists with percentages (69.6% and 66.1%) respectively, followed by the shoulder complaint (49.1%) while the hip complaint showed the lowest percentages (13.4%). Results also revealed that the mean rank values of total, proximal and distal musculoskeletal complaints were higher among females than males dentists although statistical differences were non- significant ($p>0.05$).In addition the mean rank value of shoulder complaint was higher among females (60.4) than males (47.1) with significant difference ($P<0.05$).

Concerning physical workload index results showed that the higher mean rank value was among males (67.4) than females (51.9) with significant difference ($P<0.05$). The musculoskeletal complaints(proximal, neck, shoulder and low back) had higher mean rank values in the highest quartile of Physical work load index with non – significant differences ($P<0.05$). Regarding salivary creatine kinase the proximal, total and low back complaints had higher mean rank values among dentists with highest creatine kinase quartile, while distal manifestations, neck and shoulder complaints had higher mean rank values in the average interquartile range of creatine kinase with non – significant differences ($P<0.05$). For C- reactive protein almost all the complaints (proximal, total, neck and shoulder) had higher mean rank values in the lowest quartile with non – significant differences ($P<0.05$).

Regarding tooth wear results showed that according to the type of tooth surfaces, occlusal surface recorded higher percentage (94.6%) followed by the incisal surface (90.2%), while the lowest surface was the lingual surface (9.8 %). Also tooth wear was higher among females than males regarding all tooth surfaces types and for both jaws. Results showed that total teeth surfaces with dental wear revealed weak positive significant correlation ($P<0.05$) with distal and total musculoskeletal complaints and C - reactive protein level.

Conclusion: Dentists experienced musculoskeletal complaints especially in the neck, low back and shoulder areas. Physical work load could be considered as an essential risk factor for musculoskeletal complaints. Salivary creatine kinase could serve as a biomarker that reflect the underlying musculoskeletal disorders more than C - reactive protein.