

Guest Editorial

Dental Ergonomics

The professions of dental hygiene and dentistry have acknowledged musculoskeletal disorders (MSDs) as a leading occupational hazard since the 1970's and 1980's. Low back pain was the initial concern for dentists [3] while carpal tunnel syndrome was identified as the primary musculoskeletal disorder for dental hygienists [5]. As epidemiological studies were conducted, the scope of musculoskeletal discomfort in dental professionals was discovered to be much broader than initially realized. Studies indicate that up to 56% of all dental hygienists complain of carpal tunnel-like symptoms [4,5], and the prevalence of general musculoskeletal pain is much higher, with reports of 63% to 95% for combined low back, neck, shoulder, arm and hand pain [1,2,7]. The prevalence of musculoskeletal discomfort in dentists has been reported as high as 87% [6]. Not surprisingly, MSDs represent a significant cause of attrition from dentistry fields [1,4,8].

The American Dental Hygiene Association and the American Dental Association have taken steps to educate students and practitioners about the risk for developing MSDs. However, despite increased awareness of MSDs among practitioners, the prevalence continues to be high due to the repetitive, forceful, and sometime awkward nature of tasks inherent in dental instrumentation. This special issue on ergonomics and dentistry represents the interdisciplinary efforts to understand the broad impact of MSDs on dental professionals and develop prevention strategies that can be realistically implemented in the clinic. The issue represents the collective efforts of physicians specializing in occupational medicine, dentists, dental hygiene educators, ergonomists, and occupational and physical therapists at managing and preventing MSDs.

This special issue is organized to examine the broad social and cultural contexts of disability for dental professionals, the prevalence and risk factors for MSDs, and unique solutions for MSD prevention. The first several articles address the disability impact of MSDs

on practicing dentists. Cherniack, Dussetschleger, and Bjor address the broad issue of culture and disability internationally and discuss the challenges of accurately identifying the true prevalence of MSDs in dentists (particularly in the United States) due to variation in systems of reporting. Cherniack et al. validate the risk of disability to dentists through a thorough critical review of the literature. Morse, Bruneau, and Dussetschleger present a thorough analysis of the prevalence, scope, and prevention of neck and shoulder disorders in dental professionals. These authors demonstrate the widespread nature of neck and shoulder disorders and the collective prevention strategies suggested for MSD reduction.

At the individual level of analysis, Bylund addresses the impact of Hand Arm Vibration Syndrome (HAVs) on the daily functioning of female dentists in a qualitative study. The study captures the phenomenological perspectives of disability often lost through large-scale standardized surveys. She captures the concerns faced by occupational and physical therapists directly treating women with HAVS in clinical settings.

The next group of articles documents the unique contribution of psychosocial risk factors to the development of MSDs. Warren examines the interaction of biomechanical and psychosocial risk factors that contribute to the development of MSDs in a sample of dental hygienists. Warren emphasizes the importance of recognizing psychosocial factors in MSD development and the need to formally acknowledge psychosocial concerns among students and experienced clinicians. Sanders and Michalak-Turcotte focus more specifically on the organizational risk factors for occupational stress, such as role ambiguity, responsibility, and emotional labor, in a sample of experienced dental hygienists. These authors provide suggestions and considerations related to the practice management of dental offices.

The last group of articles describes intervention strategies that may prevent or decrease the severity of

MSDs. Branson, Black, and Simmerbeck present a case study examining the process by which a student dental hygienist accommodates to the ergonomic intervention of magnification loupes. The accommodation process is rarely addressed in ergonomic literature despite the many recommendations provided by healthcare professionals. Simmer-Beck and Branson provide a review of dental hygiene instruments and offer an evidence-based analysis as to recommendations for ergonomic instruments. James, Branson, Simmer-Beck, and Bray, in a student article, examine the effect of a wrist orthosis on grip strength in a dental practitioner. Finally, Ahearn, Sanders, and Michalak-Turcotte offer ergonomics design principles and recommendations for dental office space designed to improve reach, workflow, and productivity in dental practices.

These interdisciplinary articles demonstrate the concern and progressive efforts being taken to address musculoskeletal disorders in dental professionals who treat us everyday. All contributors illustrate the continuing efforts to discover innovative prevention strategies, understand the larger systems issues, and appreciate the very damaging nature of MSDs on the lives of dental practitioners. We welcome the opportunity to work collaboratively with all healthcare professionals to prevent MSDs in the future.

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