their status will remain confidential and will not affect any staff member's willingness to provide treatment. Patients should consider the dental office a safe environment where they can be truthful about their medical condition and not fear any judgmental reactions.

TDIC Risk Management Staff. Managing patients with HIV. *CDA J* 46:723-724, 2018

Reprints not available

HUMAN ENGINEERING

Addressing musculoskeletal pain in dental care providers

BACKGROUND

Work-related musculoskeletal disorders (MSDs) are a common occupational health hazard among dental professionals, largely because of the need for adequate visualization of the oral cavity. This need results in the dental professional adopting fixed and sometimes awkward positions of the neck and upper limbs, as well as a forward-right inclined position, which has been associated with a higher prevalence of MSDs and pain. The use of ergonomic saddle seats and dental loupes for magnification has been advised as a way to avoid postures that can cause MSDs and pain. The best available empirical evidence was sought to determine if ergonomic dental saddle seats and magnification loupes can alleviate musculoskeletal pain or correct dental professionals' posture.

METHODS

A search of the Medline via Ovid, CINHAL via EBSCO, Web of Science, OpenGrey, and EThOS electronic databases was conducted to identify prospective experimental studies addressing the 2 ergonomic questions. The Effective Public Health Practice Project Quality Assessment Tool (EPHPP) was used to evaluate the methodological quality of the 8 studies identified.

RESULTS

Four studies evaluated the effect of loupes on posture and musculoskeletal pain, 4 addressed the effect of saddle seats on posture, and 1 of the latter focused on the combined effect of magnification and saddle seat use on posture.

Magnification Loupes

Similar magnification (2.5×) was used in the 4 studies of the effect of dental loupes on musculoskeletal pain or posture. Three of the studies used the flip-up design and 1 used the "through the lens" type of loupe. Two studies used a within-subjects design and found that posture assessments using Branson's Posture Assessment Instrument (BPAI) favored the use of magnification loupes. The dental hygiene students in these studies adopted significantly better posture when using the loupes than when using traditional safety glasses. Most of the students reported that the use of loupes improved their posture, increased visual acuity, and were acceptable in terms of their weight and the time needed to adjust to them. During adjustment, some of the students reported experiencing some vertigo and eye soreness.

Two studies adopted a pre-post test design comparing musculoskeletal discomfort in dental hygienists wearing loupes with final-year dental hygiene students not wearing loupes in a non-simulated clinical situation. The subjects completed surveys before and 6 months after the intervention. The dental hygienists who wore loupes had significantly reduced discomfort, whereas the control group had increased discomfort. However, the dental hygienists wearing the loupes did not perceive any improvement in neck pain. A physiotherapist provided an assessment of the participants, noting improvements in those using loupes in terms of cervical range of motion and deep neck muscle endurance.

Saddle Seats

Two studies evaluated the Salli saddle seat and 2 used the Bambach seat. Although the studies evaluated the effect of the seats on posture, none addressed their impact on musculoskeletal pain or MSDs.

Two studies used a between-subject format to study preclinical dental students performing simulated dental tasks on phantom heads. Students who used the saddle seats selected a more favorable posture than those using conventional seats, with a statistically significant difference between the 2 groups. When the posture of practicing dentists in their dental offices was observed during patient treatment, dentists using the saddle

seats also had significantly better posture than those using conventional seats.

A within-subjects study used a device to assess the spinal posture of a convenient sample of dentists and dental students performing in a simulated setting. The device measured spinal deviation from neutral for the lumbar spine sitting posture, but did not consider the upper limbs or neck. Dentists seated in saddle seats adopted a more favorable posture than those in conventional seats. The latter had a more flexed and deviant from neutral spinal posture than those using the saddle seats.

Combination of Loupes and Saddle Seats

When the postures of 3 groups of dental students on a saddle seat, a conventional seat with a backrest, or a conventional seat without a backrest and using or not using loupes were compared, all 3 groups had better posture when they used magnification. The best posture was achieved when the students used the saddle seat along with the magnification loupes, with differences between and among the study groups all highly statistically significant.

DISCUSSION

Not only does the use of a saddle seat help dental professionals to adopt a more ergonomic posture, but the use of magnification loupes also appears to reduce awkward positioning and improve visualization. The best results were obtained when the saddle seat was combined with the use of loupes to increase visual acuity and avoid unhealthy back postures.

Clinical Significance

Although the saddle seats were shown to improve posture, these studies did not address whether or not they diminished the dental professional's musculoskeletal pain or MSD. Future research should address this question. It is helpful to know that magnification loupes not only improve posture but may also help to relieve shoulder pain. Using both of these ergonomic aids provides the best relief of pain and should be adopted as the best way to guard against musculoskeletal pain among dental professionals. Because such pain can begin during dental training, the use of these aids should be taught and incorporated into the education of future dentists.

Plessas A, Delgado MB: The role of ergonomic saddle seats and magnification loupes in the prevention of musculoskeletal disorders. A systematic review. *Int J Dent Hygiene* 16:430-440, 2018

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HYPOMINERALIZATION

Molar-incisor hypomineralization

BACKGROUND

Molar-incisor hypomineralization (MIH) is currently understood to be a developmental, qualitative enamel defect caused by a reduction in mineralization and inorganic enamel components. The result is discolored enamel and fractures. These defects can be found in any primary or permanent tooth. Dentists tend to have difficulty diagnosing and managing children with MIH, so the essential data needed were outlined.

PREVALENCE AND ETIOLOGY

The prevalence of MIH ranges from 2.8% to 40.2%. It is believed that this condition affects 1 in 6 children worldwide.

The cause of MIH remains elusive, but its clinical presentation, which includes both localized and asymmetrical lesions, suggests that the origin is systemic and includes the disruption of amelogenesis during the early maturation state or earlier. Generally, the cause is considered multifactorial, such as acute or chronic illnesses or exposure to environmental pollutants during the final trimester of pregnancy and the first 3 years of life. Number of teeth affected is associated with the timing of the disturbance, with more teeth affected with later exposures. In addition, a genetic component may contribute and interact with the systemic factors.

DIAGNOSIS

Ideally, MIH will be diagnosed as soon as it is clinical apparent in the primary or permanent dentition. The dentist should conduct the examination on clean wet teeth. If clinical signs exist, the dentist should inquire about any illness that occurred during the child's early development or first 3 years of life.