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Dental health care workers are at risk for developing related musculoskeletal disorder (WRMSD). This disorder is a direct result of how we work. Poor postural habits contribute significantly to the development of many types of cumulative trauma disorders. Chronic neck and shoulder pain does not have to be the result of spending a day working in the dental office.

Learning Objectives:

- Explain the role of ergonomic assessments, design and implementation in work place ergonomic improvements
- Describe the components of the operator's role that contribute to WRMSD
- Discuss the importance of proper posture and the need to design work stations for comfort
- Describe the features and benefits of using ergonomic devices
- Identify physical stresses in the dental practice environment and the impact on upper body musculature
- Know the proper way to use ergonomic devices for comfort, injury prevention and productivity
- Implement the correct use of ergonomic devices and safe working procedures

Abstract:

In this dental practice, the risk for WRMSD is very real. In fact, many dental personnel are at risk for developing a work place related musculoskeletal disorder. While not all injuries are preventable, there are many ergonomic products that can help prevent or reduce the risk of developing WRMSD. Dental personnel, doctors, dental assistants, hygienists and lab technicians are at risk. The postures many clinicians assume while practicing and the pace of many of today's practices place dental personnel at increased risk for developing WRMSD.

Working In A Dental Practice Shouldn't Be A Pain In the Neck!

Anne Nugent Guignon, RDH, MPH

In Conjunction With:

The Richmond Institute

In This Issue:

- Discover how operator chair with arms reduce WRMSD risks.
- Understand how the components of magnification loupes.
- Learn to reduce the risk of developing a WRMSD.
- Appreciate how magnification loupes create non-stressful work postures.
- Have you ever wondered why you are so tired after working all day in your dental practice? There are many reasons for people to feel worn-out but poor posture is one thing that many dental professionals can control. This article gives everyday tips, and back pain are the most common complaints affecting more than 50% of dental practitioners and support staff workers.

Have you ever wondered why you are so tired after working all day in your dental practice? There are many reasons for people to feel worn-out but poor posture does play a larger role in the development of many types of cumulative trauma disorders. Dental personnel, doctors, dental assistants, hygienists and lab technicians are at risk. The postures many clinicians assume while practicing and the pace of many of today's practices place dental personnel at increased risk for developing WRMSD.

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Often ignored or tolerated, pain is part of your everyday dental practice. Many aches and pains are a direct result of how we work. Poor posture places stress on your entire skeletal system, which in turn places stress on the entire upper body musculature. Unfortunately, the list goes on and on, but the message is clear. Too many dental professionals suffer needless injuries. Learning to eliminate unnecessary physical strain creates a more relaxed working environment where we can focus our attention on quality patient care rather than on pain and postural discomfort. Prevention of ergonomic injuries needs to be a key component of any workplace related safety training.

Ergonomists know that awkward body postures are a major contributor to the development of work place related musculoskeletal disorders. While not all injuries are preventable, there are many ergonomic products that can help prevent or reduce the risk of developing WRMSD. Dental personnel, doctors, dental assistants, hygienists and lab technicians are at risk.

Everyone from business office administrators to dental assistants, hygienists and lab technicians are at risk. The postures many clinicians assume while practicing and the pace of many of today’s practices place dental personnel at increased risk for developing WRMSD.

Ergonomists analyze work tasks and devise ways that workers can perform a task effectively and comfortably so workplace ergonomic injuries do not become an issue. The design of working environment, the workplace accommodations and the equipment are all factors that can lead to the development of WRMSD. Dental personnel, doctors, dental assistants, hygienists and lab technicians are at risk.

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well and need comfortable microphones for voice-activated data entry. Treatment rooms need to have screens adjusted appropriately to view the monitor. Clinical personnel entering data in personnel should be able to sit comfortably with their head in a neutral position. Desk heights and surface sizes vary. Administrative confidentiality and the potential to violate current HIPAA regulations.

Headsets come in a variety of designs. Some attach to a headband, others fit neatly over the ear and there are devices that fit snugly in the external ear. Headsets must be comfortable, deliver quality sound and should contain controls for both volume and muting. Speakerphones are a pain solution however care must consider patience confidentiality and the potential to violate current HIPAA regulations.

Selecting a good magnification system can seem overwhelming, but understanding the technology will allow you to purchase a system that works effectively in your clinical setting. A number of factors need to be considered including type of magnification system, strength, quality of the optics, image resolution, width of field, depth of field, amount of available light, weight, frame style, manufacturer reliability/customer support, company repair/return policy and price. Today’s dental practitioners can select from several different types of magnification systems. Clip-on loupes have a fixed working range and allow one to move freely around their workspace in contrast to a shoulder and neck pain. Dentists, hygienists and assistants frequently develop everyday to meet the needs of a variety of workplace issues.

Flip-up magnification loupes have binoculars mounted on a conventional glass frame. A straight edge mechanism allows clinicians a choice to view a magnified image or to reposition the oculars above the line of sight for tasks that do not require magnification such as writing clinical notes or conversing with a patient. Flip-up oculars must be positioned to meet the user’s specific vision requirements. Flip-up models tend to feel heavier to the user because the weight distribution is further down on the bridge of the nose. In some cases, several different clinicians may be able to wear the same pair of loupes but only if each has the same working distance and none require any special type of vision correction.

Modern day versions can literally eliminate neck and shoulder discomfort experienced by those that spend their workday answering phones and perching on the edge of the operator are at high risk for developing workplace related musculoskeletal injuries. Improper positioning forces the upper body to support a load equivalent to forty pounds. No wonder, so many of us leave our offices every day with stiff shoulders, aching necks and sore backs!

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through the ocular, which is an important factor for those experiencing the challenge of needing additional illumination. Loupes come in a wide range of magnification strengths. As the strength of magnification increases, the width field decreases. In other words, clinicians that choose to wear lower power magnification will be able to see the entire mouth, in contrast to higher-powered loupes that allow users a more detailed view of a defined area.

Loupes that come in a wide range of magnification strengths are often reported as 2x, 2.5x, 2.6x, 3.3x and 3.8x, however there is no industry-wide standard measurement for magnifying power. Lower strengths allow clinicians to view the entire mouth at one time. Higher magnification levels provide a magnified view of just a few teeth, which can be critical when placing today’s technique-sensitive esthetic restorations.

While the power of loupes is a well-known feature, the quality of the optics is the largest factor in determining the price. Optical resolution refers to image clarity when viewing small structures. As optical resolution increases, the clarity of image improves, resulting in well-defined, crisp images. The optics should be clear from edge to edge.

Width of field refers to the size of the viewing area. A wider field also provides less elbow field width is linked to the diameter of the telescope. The higher the power, the smaller the width of field.

Adequate depth of field allows the clinical field to remain in focus without moving one’s head. Imagine the benefit of seeing the entire oral cavity from the facial of the central incisor to the distal of the maxillary second molar without putting your head in some type of awkward position. Field depth is highly dependent on the available lighting, the optical design, the magnifying power and the eye’s ability to focus (accommodation). Quality magnification loupes typically have depth of field of 0 to 6 inches. As the strength of the magnification loupes increase, depth of field decreases.

A proper declination or working angle also helps prevent ergonomic injuries. The oculars must be mounted or positioned so the clinician views a clear magnified image without tilting the head forward or back. Correct declination allows one to maintain a neutral body posture.

In order to be successful, magnification loupes should be custom fitted to each individual’s unique working range, which is the distance from the eye to the actual working field. For example, a short clinician may require a longer working range in order to maintain a neutral body posture. Measurements for custom magnification loupes are a key factor in the success of the technology.

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Magnification loupes come in a variety of frame styles and colors than ever before. The overall frame construction is a critical factor for long-term durability. Newer, lighter weight titanium frames are both durable and comfortable. Traditional steel or plastic frames are heavier. Adjustable head straps fastened just behind the head prevent slippage and counterbalance the overall weight. The nose pad must conform comfortably to the bridge of the nose.
Two factors are required to successfully transition into the world of magnification: properly fitted high-quality loupes and a desire to enhance how you practice. Clinicians often select loupes at a dental convention; however, the true test of magnification comes in your own practice setting. Some practitioners adjust to loupes in a couple of days; others require more time.

Many practitioners think that wearing magnification will cause their vision to deteriorate while in fact properly fitted loupes lessen eyestrain in addition to improving posture. A specific vision correction can be added to any loupes lens. It is wise to have a current vision examination before placing a final order. A local optician can update a prescription in a flip up system. The manufacturer must install any prescription change in TTL magnification. Many clinicians find it convenient to schedule updates while they are busy from their practice.

Company reliability and customer service are also very important to consider. Most manufacturers offer a variety of financing plans and automatic renewal periods. Several manufacturers also offer a trial period of use before purchase to ensure overall satisfaction.

Purchasing a pair of custom loupes is a substantial investment. It is important to consider the number of years that you will wear magnification and purchase the best quality possible. If the initial price of magnification seems high, divide the cost by the number of years you will practice.

Consider the trade-off of developing a cumulative trauma disorder versus improved clinical comfort and more accurate visual acuity. High-quality loupes last for years when they are cared for properly. The cost of today’s loupes amounts to pennies per day over time. More and more dentists, dental hygienists, dental assistants and laboratory technicians are discovering the unique benefits of magnification and find it impossible to practice without this all-important technology. Some even purchase a backup pair.

Chairs with arms play a valuable role in reducing shoulder and neck discomfort when clinicians, as well as business office staff, learn to use the arms to support the weight of the upper body. Adjustable armrests allow the individual user to customize a chair to fit their personal body build, resulting in a more relaxed upper body posture. Raising the height of the seat pan so the hip joint is several inches higher than the knees also reduces strain in the back.

Although we generally sit to perform clinical treatment there are occasions where standing is more appropriate. Clinicians frequently stand when taking radiographs, extractions, extraoral photographs and extracting teeth. In addition, some patients cannot tolerate a reclined patient chair. It doesn’t take much time to adjust the height of the patient chair to avoid unnecessary bending.

We are health care practitioners focused on preventing dental disease. Are our prevention thoughts limited only to issues in the oral cavity, or should we enlarge our focus to consider workplace safety for everyone in the dental office? Repetitive stress disorders are the most common occupational injury among dental health care workers. Equip your environment to be comfortable. Discover how to sit up straight, use magnification loupes and put on a headset. Your shoulders, neck and back will thank you every day!
References


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CE Questions:
Working In A Dental Practice Shouldn't Be A Pain In the Neck!

Test Instructions - Please fill in the bubble corresponding to the answer you believe is correct. Detach the answer sheet from the newsletter and either mail or fax to The Richmond Institute for Continuing Education.

1. Poor postural habits contribute significantly to the development of many types of cumulative trauma disorders. What percentage of dental practitioners and support staff workers complain about shoulder, neck and back pain?
   a. One out of two
   b. Working in a dental office does not pose a significant risk
   c. Less than ten percent
   d. Seven out of ten
   e. Four out of nine

2. Dental office workers are at risk for developing workplace related musculoskeletal disorders. Which of the following conditions would be never classified as a WRMSD?
   a. Chronic headaches
   b. Alopecia
   c. Tension neck syndrome
   d. Cervical myofascitis
   e. Thoracic outlet syndrome
   f. All of the above conditions can be a WRMSD

3. Characteristics of poor upper body posture include. Which of the following postures is not considered a risk factor for developing an upper body cumulative trauma disorder?
   a. Rounded shoulders
   b. Elbows positioned more than ten degrees away from the trunk of the body
   c. Head leaned forward in an unsupported position
   d. Crouching one's ankles
   e. Upper body slumped forward
   f. All but D
   g. A, B, D, E
   h. B and E only

4. Which factor’s contribute to poor telephone ergonomics?
   a. Creding the receiver between the head and shoulder
   b. Using a speaker phone
   c. Tension on the phone cord
   d. Talking on a cell phone
   e. B, C, and D
   f. A and C

5. Telephone headsets should have the following characteristics
   a. Fit the user’s ear and/or head comfortably
   b. Contain controls for volume and muting
   c. Be fabricated in fashionable colors
   d. Deliver quality sound
   e. All but C
   f. A and D

6. Many clinicians now wear magnification loupes in dental practice. What are the key factors in selecting a proper magnification system?
   a. All of the following factors are important
   b. Zoom or optical power
   c. Strength and clarity of the images
   d. Size of field
   e. Width and depth of field
   f. Amount of available light
   g. Overall cost to the most important consideration

7. Through the lens (TL's) loupes oculars are directly mounted into the carrier lens according to a clinicians individual working distance and specific eye requirements. The oculars in flip-up loupes can not be positioned to meet a clinician's specific visual requirements.
   a. The first statement is FALSE and the second statement is TRUE.
   b. The first statement is TRUE and the second statement is FALSE.
   c. Both statements are TRUE.
   d. Both statements are FALSE.

8. Width of field refers to the size of the viewing area and is linked to the diameter of the telescope, the optical design and the magnifying power. Depth of field is dependent on the available lighting, optical design, magnifying power and the eye’s ability to focus (accommodation). As the strength of the magnification increases, both the width and depth of field decrease.
   a. Only the first and last statements are correct
   b. All three statements are correct
   c. All three statements are false
   d. The first two statements are correct and the last is false.

9. In order to obtain accurate measurements for magnification loupes Clinician positioning should include:
   a. Positioning is irrelevant
   b. Sitting up straight with shoulders in a relaxed position
   c. Head tilted forward
   d. The height of the patient's head eight inches below the clinician's chin
   e. Elbows tucked close to the body
   f. Forearms parallel to floor
   g. B, C, D, E
   h. B, E, F

10. Which of the following factors contribute to a clinician comfort when wearing magnification loupes?
    a. Properly adjusted head strap
    b. Correct declination angle
    c. Weight and size of frame
    d. Correct working distance
    e. Properly adjusted silicone nose pads
    f. All

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