underwent miniaturized visual tests in a simulated clinical setting. Magnification aids were then worn if they were part of the individual clinical equipment. Assessments included the effect of age and magnification on near visual acuity.

RESULTS

A total of 156 subjects were under age 40 years and 35 were age 40 years or older. Thirty-one of the dental hygienists and 3% of the students reported habitually using a magnifying loupe. Seventy-seven percent of these individuals were age 40 years or older. Three loupe systems were used, but no significant differences were found among them.

The self-assessment showed a median value of 3.5, range 1 to 5. Twenty-two percent of the subjects reported a score of 2.5 or less. When the self-assessed and objectively measured values were compared, a weakly positive correlation was found, but the Spearman's rank correlation coefficient was 0.27, which was significantly higher than 0.

The visual tests with natural vision yielded a range from 6.2 to 18.9 mm^{-1}. This represents a difference of 300% in the smallest dimension detected. Subjects less than age 40 years had significantly superior visual performance compared to subjects age 40 years or older. When 18 test subjects age 40 years or older used loupes, the group median was the same as in the subject group under age 40 years with natural vision. No significant difference in visual acuity was found between these 2 groups. The use of loupes was able to compensate for presbyopic deficiencies. The 22 test subjects who used loupes in their daily clinical work were also tested with and without loupes and had significantly better visual performance with loupes.

DISCUSSION

Most of the dental hygienists did not use loupes routinely, but the results of the objective visual tests indicate that those who did use them had significantly better visual performance with them on. In addition, older practitioners tended to perform better when they used loupes, with their visual acuity comparable to that of younger hygienists.

Clinical Significance

Regular near visual tests should be performed to ensure that dental hygienists as well as dentists maintain their visual acuity during dental care activities. Loupes should be introduced early in the training of dental professionals to compensate for any visual deficiencies. They should also be mandatory for individuals over age 40 years to compensate for presbyopia.

Eichenberger M, Perrin P, Sieber KR, et al: Near visual acuity of dental hygienists with and without magnification. *Int J Dent Hygiene* 16:357-361, 2018

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WELLNESS

Health care providers need exercise

BACKGROUND

The work of health care providers can lead to both physical and mental problems. Occupational stress can occur when they are unable to call on their physiological, cognitive, emotional, and behavioral responses to handle their workload. If they ignore their psychological health, they can develop mental health issues. The benefits of exercise to help manage stress may be particularly applicable for health care providers.

WORKPLACE STRESS AND BURNOUT

Many factors that are part of the health care professional's workplace can create stress and burnout. Some of these are managing the frequent reorganization and change in health care organizations, constantly dealing with life-and-death issues, working long hours, dealing with high expectations, contemplating possible litigation, and engaging in poor health-promoting activities. Stress can arise from other health issues and contribute to mental health problems such as depression, burnout, disrupted sleep, and poor quality of life. Health care professionals can also experience anxiety, guilt, and fear of accountability as a result of chronic exposure to stress. Personal relationships can suffer; if the family isn't supportive, further illness can occur.

Occupational burnout can interfere with work performance and lead to medical errors. Burnout is defined as emotional exhaustion that produces a negative mental attitude, lack of perceived self-achievement, and poor care of others. It can be exacerbated when health care providers are unwilling to take time off from work to recover. It's important for physicians and other health

care workers to be able to recognize when they are under too much stress and lack self-management skills. Health care providers can be susceptible to having suicidal thoughts if they are depressed or suffering burnout.

BENEFITS OF EXERCISE

Regular exercise offers a way to counteract many of the negative, depressive symptoms seen with excessive stress. Regardless of age, practicing regular, moderately intensive physical activity can provide benefits and protect against stress-related mental disorders. Specifically, it can reduce anxiety, provide a mental escape from work, and improve mental energy and the ability to concentrate.

Exercise can also improve brain function and cognitive ability. Exercise increases brain-derived neurotrophic factor (BDNF), which is a protein expressed in developing and adult mammalian brains. It's involved in neurogenesis, differentiation, proliferation, angiogenesis, neuroplasticity, and neuron survival and improves cognitive function. Several regions of the brain, especially the hippocampus, respond more strongly after exercise.

Increased BDNF levels correlate with the exercise-induced changes in anterior hippocampal volume. It's hypothesized that BDNF concentrations are dependent on the intensity of exercise that is performed. In addition, older, physically active adults have higher concentrations of serum BDNF and increased volumes of grey matter compared to those who lead sedentary lives.

When older adults engage in regular aerobic exercise for more than 12 months, hippocampal volume can be considerably increased, which is important for both long-term memory and spatial navigation. This could benefit surgeons specifically. Aerobic activity can also reduce the degree of age-related atrophy in the prefrontal and temporal cortices of the brain, which are associated with executive control functions, such as decision making and regulating social behavior. As retirement age increases, careers are extended, so that the benefits of regular exercise may be extremely important. With regular exercise, surgeons may be able to maintain effective skills and perform safety for a longer period of time. Other aspects that can be improved include situational awareness, communication, and executive function.

In children who are physically fit, increased hippocampal volumes are linked to better cognitive performance and long-term memory. Comparison of magnetic resonance images (MRIs) of the brain among groups who did aerobic, strength, or flexibility training showed that those who exercised aerobically had greater volumes of grey and white matter in the frontal and temporal lobes.

In addition to physical and emotional health benefits, exercise can improve psychological health. Surgeons in particular must have a sense of self-efficacy, or the belief in their ability to accomplish tasks, to perform well in their surgical tasks. Exercise can help to overcome the lack of confidence surgeons may experience when they are dealing with psychological problems.

Clinical Significance

Exercise offers benefits that help to manage the detrimental effects commonly seen in health care professionals' working conditions. Although how much exercise is needed and how to quantify the benefits to cognition, emotional health, and mental health remain undetermined, regular, moderate exercise can be recommended as a way to improve many aspects of life for nearly everyone.

Parry DA, Oeppen RS, Amin MSA, et al: Could exercise improve mental health and cognitive skills for surgeons and other healthcare professionals? *Br J Oral Maxillofac Surg* 56:367-370, 2018

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