Osteopathy for Stress, Tension, and Headaches

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Author Note

Studying osteopathy through NUMSS has been an enlightening journey despite the many challenges presented by the ongoing global Covid-19 pandemic. I decided to write my thesis on stress, tension, and headaches after feeling inspired by Dr. Andrew Taylor Still, his rope swing pillow and the headache relief he experienced. While I have only had a handful of migraines and the occasional headache, knowing the pain, my heart goes out to anyone suffering. I sincerely hope to provide clients with life-changing relief and improved quality of life whenever physiologically possible through my science-based osteopathic practice.

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Abstract

A tension headache is recognized as one of the most common types of headache and while the exact cause is unknown, stress, both mental and physical, certainly plays an important role. As for headache pain, it is believed to be caused directly by spasms of the muscles that cover the skull. The osteopathic manual treatment of these musculoskeletal problems is highly beneficial. Still, techniques appear to be effective when treating the ribs, particularly the posterior ribs 3 and 5. Spasms of the trapezius and levator scapula muscles are also common, and facilitated positional release appears to be a highly effective method of resolving most spasms. Following treatment of the suboccipital, cervical, and thoracic areas and the upper ribs, the manual osteopath may also treat cranial strain patterns.

The use of osteopathic manual therapy does not preclude other modalities, such as medication, exercise, stretching, and addressing any psychosocial issues. Many clients with muscle tension headaches can learn to perform an at-home myofascial release, stretching, or exercises. The procedures should be explained and demonstrated to the client and reassessed at follow-ups to ensure maximum benefits are realized.

Keywords*:* stress, tension, headache, osteopathic manual therapy, manual osteopath, trigger point headache, somatic dysfunction, type of headache, muscle tension headache, migraine headache, osteopathic manual treatment, migraine attack, body connection, temporomandibular joint, cluster headache, clients, chronic pain, upper extremity extension, autonomic nervous system, neck pain intensity, osteopathic mobilization

Osteopathic Manual Therapy for Physical Stress

Numerous osteopathic manual therapy techniques, including suboccipital inhibition and rib raising, have been linked to increased heart rate variability, improved autonomic homeostasis, decreased muscular tension, and decreased stress perception. Many of the tight chest sensations accompanying shock and other feelings may be the product of chronic stress. These osteopathic techniques can help manual osteopaths care for their patient's bodies, minds, and spirits by supporting their physiologic resilience and homeostasis throughout challenging times. Its proposed mechanism of action is to release the costotransverse articulation, as the sympathetic chain ganglia arising from T1-L2, which supply sympathetic innervation throughout the body, are only anterior to this joint.

Many clients who are fearful, anxious, or upset develop chronic tension in this muscle over time, which serves as a stabilizing feature for their emotional distress (sensation in this area reinforces the emotional patterning connections that are within the central nervous system). A manual osteopath may discover an unanticipated somatoemotional component in a patient. Tension can exacerbate psychopathology, and it is pretty standard for emotional aspects to reconnect and resurface as a source of contention.

Psychology of Somatic Dysfunction

Somatic dysfunction with psychological implications is when the associated muscle tension has a literal or symbolic meaning. At times, a muscle will tense even when there is no actual movement, activating the alerting mechanism. There are neuro-linguistic phenomena in which an image, a sound, a smell, or a tactile sensation is released on occasion. For example, the remark

"This makes my skin crawl" demonstrates the bodily equivalent of a psychic sense. It is as if the brain stores every memory, every trauma, and every pleasant and unpleasant experience. When the image is recalled, the entire scene may reappear, including sights, sounds, smells, body positions, and emotions. For a great variety of reasons, this type of experience may be stored in the subconscious. This is frequently the result of an unpleasant event that had to be blocked from awareness and concealed from consciousness. The manual osteopath may not understand precisely why a patient behaves in this manner or why it occurs at particular points in the patient's life. By speaking with clients and listening to what they say, the clinician can identify and build on common themes.

Occasionally, somatic dysfunctions do not resolve completely. Perhaps an emotional conflict triggers a physical response, and sometimes a physical situation is associated with emotions. A review of some psychiatric literature indicates that behavioural concepts and models rarely change. When science advances, our understanding of the neurological, neuropharmacological, and psychological systems change. Treatment modalities evolve in response to this advancing knowledge, but they rarely negate the value of the original hypothetical constructs and theoretical models. Although the body of osteopathic literature on the treatment of psychiatric clients is small, it is significant to recognize the mind-body interface and actions.

Mind, Spirit and Body Connection

The brain changes observed in clients with chronic pain provide evidence of mind-body connections. Osteopathic mobilization benefits clients in various ways, including decreasing nociceptive input, improving structure and function, and balancing dysfunctional nervous system

aspects. Emotions amplify brain signals, activating the sympathetic arm of the autonomic nervous system and increasing pain levels. These changes trigger adrenergic and sympathetic responses, including the well-known components of the fight or flight response. These responses can include muscle spasms and peripheral vasoconstriction, which can exacerbate physical symptoms. The conscious mind can influence pain perception through structures such as the medial prefrontal cortex and the anterior cingulate gyrus. Osteopathic mobilization treatment can positively impact this chain of events by utilizing endogenous systems within the body to facilitate a return to a balanced state of health, which includes affecting the autonomic nervous system and decreasing nociceptive input.

The endocannabinoid system is another mechanism illustrating the mind-body connection that is of interest to the manual osteopath. Additionally, it has been demonstrated that cannabinoid receptor activity affects short-term memory, cognition, mood, and emotion. Emotional issues can also manifest as modifications to the bodily structure, particularly the myofascial tissue. These injury vectors can be released therapeutically through osteopathic treatments, thereby improving structure and function and affecting the psyche. A traumatic motor vehicle accident is an example of when trauma is induced in the tissue on mechanical and emotional levels. Osteopathic mobilization has been demonstrated to elicit cannabimimetic effects via the endogenous cannabinoid system, affecting serum cannabinoid levels.

Headaches within Osteopathy Practice

When a secondary headache has a close temporal relationship to another disorder known to cause headache, it should be considered. Head and neck trauma, cranial or cervical vascular

disorders, non-vascular intracranial disorders, and substance use are all factors to consider. In many of these conditions, osteopathic manual therapy to the head and neck may be contraindicated. Therefore, it is critical to search for any red flags as part of a comprehensive history and physical examination.

Muscle Tension Headache

Muscle Tension Headaches are the most prevalent primary type of headache affecting up to 90% of adults. These types of headaches typically affect both sides of the head and are steady rather than throbbing. Episodic tension-type headaches are uncommon and usually last between 30 minutes and seven days. Chronic tension-type headaches develop over time as a result of these headaches. These are slightly more severe and may be accompanied by photophobia, phonophobia, or mild nausea.

Clients need to be educated to distinguish between the two types to choose the appropriate treatment and avoid medication-induced headaches. In migraine sufferers, a diagnostic headache diary is beneficial for identifying coexisting frequent episodic tension-type headaches. The most significant abnormal finding in tension-type headaches is increased tenderness. It is detected with small rotating movements and firm pressure on the frontal, temporal, masseter, pterygoid, sternocleidomastoid, splenius, and trapezius muscles with the second and third fingers. It can also be detected with a headache without aura and coexists with migraines without aura.

During the initial assessment, pay special attention to the occipital and suboccipital regions. While high-velocity low amplitude (HVLA) is a viable option for some headache clients, many will benefit from mobilization with significantly reduced risk. Osteopathic cervical soft tissue treatment and myofascial release and strain counterstrain are beneficial in this area. It is preferable to treat thoracic dysfunctions first, followed by cervical dysfunctions. The thoracolumbar junction, the sacral base, and the feet are also areas of focus. Dr. Sutherland's indirect occipito-atlantal decompression procedure before HVLA / mobilization, muscle energy techniques is quite beneficial.

The manual osteopath should always heed these old words of wisdom "Treat what you find, not what you expect to find." The manual osteopath helps to facilitate healing, but the healing always occurs internally.

Migraine Headache

Migraines are a prevalent recurrent headache syndrome that affects approximately 18% of females and 6% of males in Canada and the United States. Migraine headache, also called vascular headache, is caused by constriction of the intracranial vessels followed by dilation. Nausea and vomiting associated with migraines may result from vagal involvement at the jugular foramen, accompanied by dural sleeve tension. Impaction of the sphenosquamous pivot is not uncommon in migraine clients. Due to the temporal bone's relationship to the Gasserian ganglion and trigeminal nerve, any dysfunction of the temporal bone can result in migraine attacks.

The middle meningeal artery passes through the sphenosquamous articulation, close to the sphenosquamous pivot. Nitroglycerine imports may cause a migraine. Nursing during a migraine attack can be triggered by tension in the jugular foramen or a dural foramen. The brain may activate and sensitize trigeminal nerve fibres located within the meninges. These irritated nerve fibres may release chemicals that contribute to the process further by causing blood vessels on the brain's surface to swell.

These swollen blood vessels then communicate with the brainstem via pain signals. Primary and secondary migraines may present with indistinguishable symptoms. It is critical to rule out any additional underlying somatic causes. Cranial osteopathic manual therapy is best reserved for visits between migraine attacks when appropriate procedures are used to liberate the sphenobasilar and temporal regions. When present, avoid triggers (cigarette smoke, alcohol, stress, hormones, medications, and exercise).

The use of osteopathic manual therapy to treat somatic dysfunction associated with migraine headaches does not preclude other modalities, such as avoiding triggers, including smoking & alcohol or taking medications, and addressing any psychosocial issues. The last thing a patient wants during a migraine attack is for someone to rotate their head and neck. The HVLA procedure is not recommended for treating cervical or suboccipital dysfunction during the acute phase, as it frequently aggravates the migraine headache. However, even after the acute phase, mobilization is gentle and effective without the added risks associated with HVLA and may be the preferred option.

Trigger Point Headache

The headaches that seem to benefit the most from trigger point therapy are those in which the muscles attached to the skull are tender. The literature suggests that while myofascial trigger points in the suboccipital muscles can contribute to the origin or maintenance of headaches, a complete understanding of these muscles' function in trigger point headaches requires additional study.

Fernandez-des-Ias-Penas and his colleagues developed a clinical prediction rule to identify clients with chronic trigger point headaches who may benefit from short-term manual trigger point therapy. It combined various pressure releases, muscle energy, and soft tissue techniques with progressive, low-load deep cervical flexor and extensor muscle strengthening exercises.

A study showed pain patterns at trigger points in the upper trapezius muscle in chronic trigger point headache clients and healthy subjects. However, in clients with chronic trigger point headaches, the evoked referred pain and its sensory features matched the patient's chronic headache pain.

Cluster Headache

Cluster headaches are usually a rare type of headache disorder on their own. They are defined by severe to highly severe unilateral pain in and around the affected eyes. Attacks last between 30 minutes and 2 hours and occur once every other day to eight times per day. Most clients are restless or agitated during an attack because the pain is excruciating, and they cannot lie down. Consider C1–C2 anterior dysfunction if a patient reports an ice pick sensation behind the eyes.

Treating this dysfunction with osteopathic manual therapy can significantly improve a client's condition. It's a fact men are six times more likely to be affected than women. Cluster headaches are similar to migraines in terms of somatic dysfunction and osteopathic mobilization techniques.

Temporomandibular joint (TMJ) Syndrome - Headache

Temporomandibular joint (TMJ) syndrome is a well know dysfunction of the jaw muscles and nerves caused by a temporomandibular joint fracture or inflammation. The temporomandibular joint attaches the jawbone to the skull. When the temporomandibular joint is injured or inflamed, this can result in discomfort exacerbated by chewing, clicking, crackling, and popping of the jaw. As the irritation progresses, swelling on the sides of the face and nerve inflammation develop, resulting in headaches and some people migraines.

Somatic Dysfunction Secondary to Organ Disease - Headache

Gallbladder disease headaches are also referred to as bilious headaches. In the T6–T9 segments, sympathetic afferent nerves from the biliary tree return to the spinal cord. Frequently, the dysfunction is T8 extended with right side-bending and rotation. It may increase tension in the suboccipital triangle muscles, compressing the vertebral artery and greater occipital nerve as they pass through the triangle. As a result, muscle tension and migraine headaches may occur.

The treatment of headaches caused by visceral pathology must address the underlying cause and refer to a physician. Once severe pathology has been ruled out, they may benefit from osteopathic treatments that encourage proper structure and function.

Exercise in Treatment of Headache

The evidence would indicate that deficits in deep neck flexor muscle performance may be associated with cervicogenic headache and that specific exercise prescription using a pressure biofeedback system may play a significant role in care, combined with osteopathic mobilizations. In many countries, pain symptoms are a significant work-related health problem, even in sedentary occupations, and therapeutic exercise can help reduce neck pain intensity. A study looked at the effects of a workplace physical exercise program consisting of light resistance training and guidance on perceived headache and neck pain intensity. Six complex symmetrical movements were performed during the training session: upper extremity extension, upper extremity flexion, trunk rotation to the right, trunk rotation to the left, knee extension, and knee flexion. The training regimen was repeated 20 times with a 30-second break in between. This physical activity intervention resulted in a marginally significant reduction in the severity of headache and neck symptoms and improved upper extremity extension power.

Importance of Posture in Headache Care

In many cases correcting posture-related muscular imbalances tends to improve the efficacy of osteopathic manual treatments for both stress and cervicogenic headaches. However, correcting posture takes time and involves the client's consistent practice and improved body awareness. For this reason, regular follow-ups at the beginning of treatment are recommended to ensure good compliance and better outcomes with a targeted approach. The type of osteopathic manual treatment may include mobilization of restricted joints, craniosacral, myofascial, and soft tissue massage to help release muscle tensions and improve the presenting posture.

Conclusion

The use of complementary and alternative medicine has been increasing within Canada, the USA, Europe and many developing countries. Manual osteopaths are starting to establish themselves as professional, cost-effective holistic providers who effectively treat chronic pain, stress, tension, and headaches, amongst many other things.

Manual osteopaths of the 21 Century are well-positioned to help significantly reduce the impact that chronic pain, stress, tension, and headaches have on the health care system, employers, and society.

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Chart 1 - International Classification of Headache Disorders (ICHD-3)

PART I - Primary Headaches

1. Migraine

2. Tension-type headache (TTH)

3. Trigeminal autonomic cephalalgias (TACs)

4. Other primary headache disorders

PART II - Secondary Headaches

5. Headache attributed to trauma or injury to the head and/or neck

6. Headache attributed to a cranial or cervical vascular disorder

7. Headache attributed to non-vascular intracranial disorder

8. Headache attributed to a substance or its withdrawal

9. Headache attributed to infection

10. Headache attributed to disorder of homeostasis

11. Headache or facial pain attributed to disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth or other facial or cervical structure

12. Headache attributed to psychiatric disorder

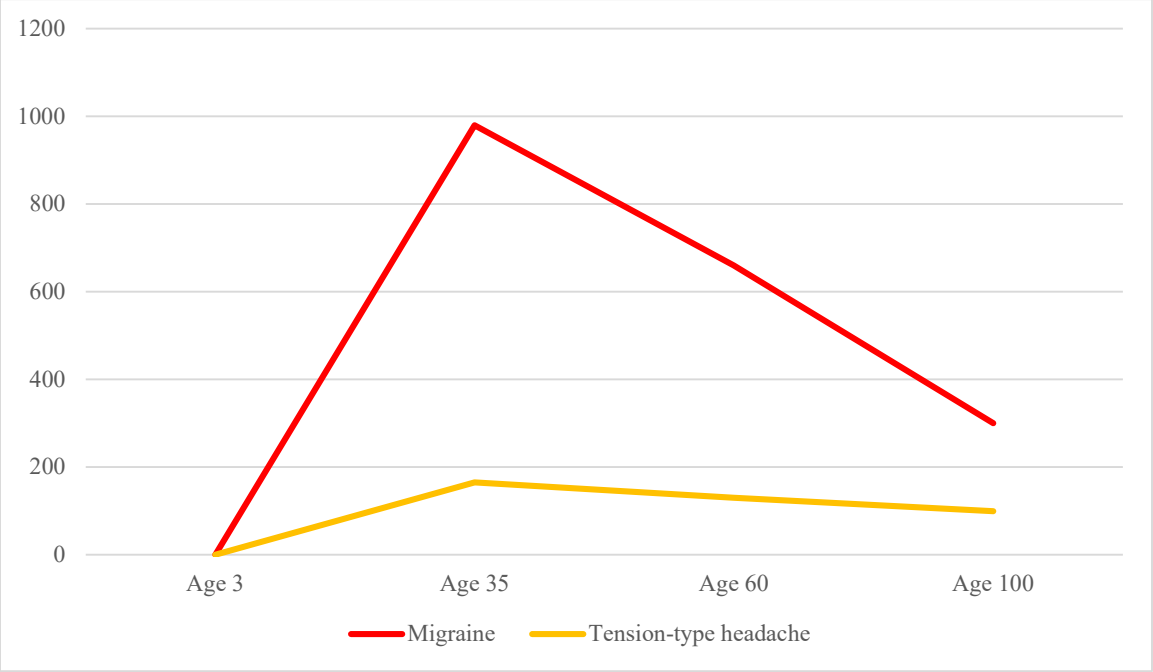
PART III - Neuropathies & Facial Pains and other headaches

13. Painful lesions of the cranial nerves and other facial pain

14. Other headache disorders

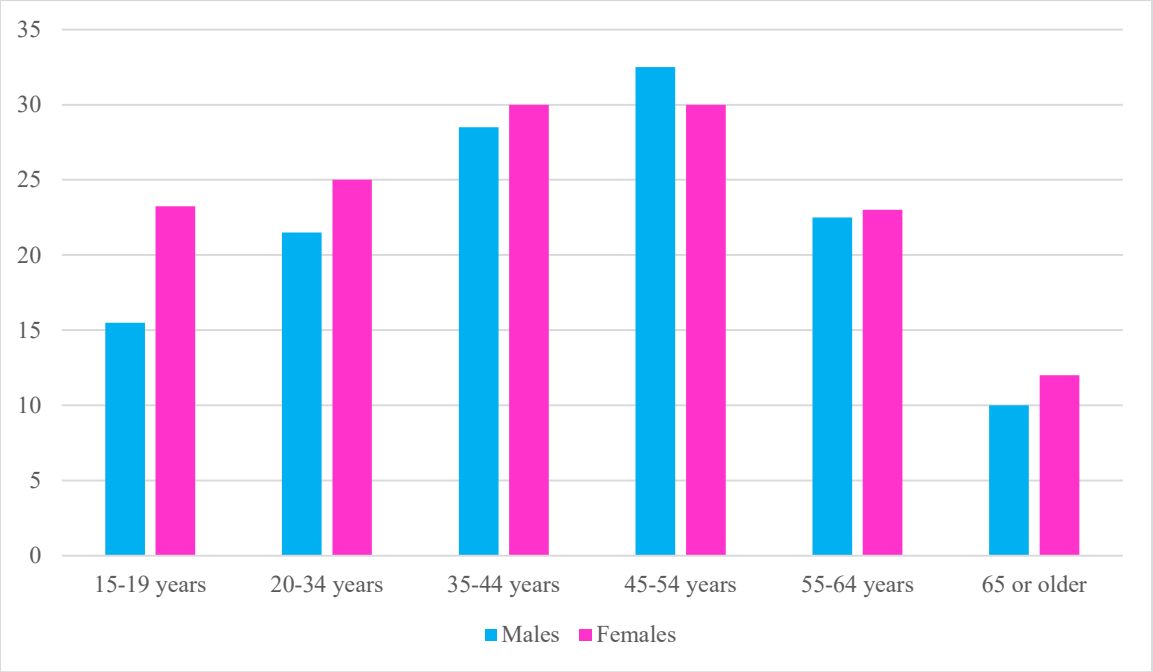
Data Source: The International Classification of Headache Disorders 3rd edition, 2018

Chart 2 - Global years of life lived with disability (YLD) rate per 100 000 population due to migraine and tension-type headache by age, 2016.



Data Source: The Lancet Neurology Volume 17 Issue 11 Pages 954-976 DOI: 10.1016/S1474-4422(18)30322-3, 2018

Chart 3 - Percentage of people in Canada reporting stress most days "quite a bit" or "extremely stressful" by age group and sex, 2014.



Data Source: Canadian Community Health Survey, CANSIM table 105–0501, 2014