Asia-Pacific Chiropractic Journal

ASRF
CASE REPORT PROJECT

Improvement in self-reported Mental Processing and Quality of Life in a 74-year old male concomitant with Chiropractic care for LBP: A case report

Ryan Seaman, Ruth Postlethwaite, and Clare McIvor

Abstract: A 74-year-old male presented for Chiropractic care with concerns relating to back pain, hypertension and reflux.

Over the course of care, he noted that his mental acuity improved. This was significant given he was acting in board and organisational roles post-retirement, and for him his self-reported increased mental sharpness and ability to think and act strategically was of great benefit.

These findings, though anecdotal and in addition to his primary reasons for care, are consistent with Chiropractic research indicating that Chiropractic care has impacts on the prefrontal cortex area of the brain.

Indexing Terms: Chiropractic; Quality of Life; mental acuity; ageing; subluxation ASRF.

Introduction

Among the many advancements in Chiropractic research in recent years has been the discovery of the link between Chiropractic care and brain function. Not only has this line of research opened up new areas of understanding in terms of the potential applications for Chiropractic care, but it has given more gravitas to the argument that Chiropractic care may be useful far beyond the domain of musculoskeletal complaints, such as back and neck pain.

Three studies emerging in 2013, 2016 and 2018 looked at subclinical neck pain, Chiropractic care, and multi-sensory integration. The first study found that subclinical neck pain had negative impacts on cortical and cerebellar processing. (1) Given that this finding was present in people who had neck pain they had not sought clinical help for, it is feasible (though unconfirmed) that this finding might be

… our care of LBP also produces changes in mental processing and acuity, although at this time it is largely self-reported. This report reflects the literature and documents improved 'executive function' in a 74y male'

even more severe in people with a clinical level of neck pain. The second study found differences in subclinical neck pain patients pre and post-spinal manipulation when it came to performing a mental rotation task. (2) This study was followed by another in 2018 which looked at subclinical neck pain and its association with altered multi-sensory integration. (3)

The aggregated learnings from these studies were that even lower grades of neck pain could alter aspects of brain function, and spinal manipulation (i.e. as seen in Chiropractic care) could reverse or improve this.

In 2016, a groundbreaking study was released in which it was discovered that adjusting the spine affects sensorimotor integration in the prefrontal cortex. (4) This study, which involved an independent medical researcher, confirmed that changes could be observed in the prefrontal cortex of the brain when the spine was adjusted. While this line of investigation continues, its possibilities for executive function and mental rotation are indeed promising.

This was a complementary finding to studies which confirmed brain changes in chronic low back pain patients. These were both structural and functional brain changes spanning diverse brain areas pertaining to both cognition and emotion.(5) Furthermore, a 2020 longitudinal study used fMRI scans to confirm that spinal manipulation altered brain activity in chronic low back pain sufferers. (6) Another notable contribution to Chiropractic brain-spine research found a 45% increase in the drive from the brain to the muscles. (7) This change was measured in the H-reflex and V-waves, meaning it was at the brain level not that of the spine. The meaning extrapolated from this study was that when we adjust subluxations, we improve strength, prevent fatigue, and change the way the brain drives the muscles.

Overall, this body of research connects the experience of chronic neck and back pain with altered brain function. The specific findings regarding mental rotation tasks and prefrontal cortex changes indicate that increased mental acuity under Chiropractic care may be a possibility for patients, the specifics of which may be made evident in future research.

Connecting Chiropractic care to improvements in *Quality of Life* (QoL) is both an easier case to make, and a harder case to quantify. Significant case report data exist confirming improvements in QoL concomitant with Chiropractic care. Currently, QoL can be measured across multiple domains and using multiple tests such as the PROMIS-29 *Mental Health Summary Score*, and the RAND-36 *Measure of Health Related Quality of Life Score*. (8)

While case report data indicating improvements in QoL are many and varied, larger studies connecting the two include a 3-month longitudinal study of 2,024 patients across 6 Chiropractic clinics. (9) In this study, a statistically significant improvement was noted in health (13% in physical functioning) and 30% (in mental health) on a group level. However, further research is required as only a minority of the participants in the study experienced a resolution of symptoms, which indicated there was more to understand in terms of the linkage between symptomatology and QoL.

Other research has linked Chiropractic care to increased QoL in office workers with non-specific pain, children, and US Veterans. (10, 11, 12)

This case report details the care of a 74-year-old male who achieved increased mental '*sharpness*' or '*acuity*' or '*processing*' while under Chiropractic care for a chief complaint of low back pain.

Case details

A 74y male presented for Chiropractic care with primary complaints of low back pain and headaches as well as reflux. A horticulturist by profession, he described his lifestyle as '*active*' and was under regular Chiropractic care as a lifestyle/wellbeing patient.

His medical history included hypertension and chronic reflux, as well as a past history of prostate cancer. The latter was described as low grade, and was in remission with ongoing lifestyle change managed through his oncologist. The patient was, and remains to be, an active community member, who contributed to his community both as a board member of a community body, and as a volunteer who undertook physical and organisation volunteering.

Clinical findings

Prior to the commencement of the present course of care, the patient had been a lifestyle practice member for approximately ten years, attending Chiropractic care for regular, wellness focused and subluxation-based care. Prior to this, he first engaged as a crisis client who entered and exited care sporadically based on pain and symptomatology.

Upon commencement of the present care plan, a thorough examination took place. This included functional exams, radiographic postural measurements (see below) and *Insight Station* scans. This battery of tests revealed several abnormal functional exams and postural anomalies. His I*nsight Station* scans showed heart rate variability scores of 46, muscle tone and balance scores of 67 and organ and gland control scores of 68 (and overall efficiency of 59) prior to care commencement.

Subluxation findings included C1 left, C3 right, T4 bilaterally, L4 left and Lumbopelvic ipsilaterally. Notably, a mid thoracic subluxation was often noted when he reported that his reflux had flared up. As he aged, his thoracic kyphosis curvature was showing notable increases. Thus, key areas of focus for Chiropractic care were the upper cervical and mid-thoracic regions of the spine.

In addition to his low back pain, headaches and reflux, the aims of care were to enable him to maintain his *Quality of Life* which included a high level of physical activity in his volunteering positions, as well as maintaining mental clarity so he could contribute meaningfully in his board positions.

Management

The patient commenced a course of Chiropractic care in which he was managed using *Diversified Technique*, *Gonstead Methods*, and *ABC protocols,* as well as drop-assisted adjusting and *Charrette's* extremity adjusting protocol. The majority of adjustments were provided manually.

On every 15th visit he underwent a functional review as well as bi-annual radiographic check ups to monitor degeneration of his kyphosis. This served the dual purpose of giving him peace of mind that no destructive bone activity had formed due to his prostate cancer.

In addition to the above care regime, additional care recommendations included dietary advice, range of motion exercises and stretching where necessary. The patient was very self-motivated when it came to maintaining an active lifestyle.

Outcomes

Over a 15 week course of care during which he attended once per week, a steady, continual improvement in his functional exams was noted. He returned significant increases on his *Insight Station* scans over the course of care, with HRV increasing to 86 from 46, and organ and gland control (thermal) scans rising to 86 from 68 and reflecting an overall personal neural efficiency index of 76. His muscle tone and balance did decrease slightly, however these had been prone to fluctuate over time depending on his workload and community involvement.

This coincided with a decrease in low back pain, and a decrease in the frequency and severity of both headaches and reflux. However, most notably, the patient noticed and voluntarily self-reported that the speed at which he was able to mentally process information in high demand meetings also improved significantly. He remarked that his ability to think quickly and strategically increased to a level comparable with those around him who had more education and youth on their side. He remarked that he felt like '*it was him in his younger days*'.

He noticed that he had been asked to contribute to more meetings with government officials and government departments since he started this care plan, this also increased when he himself noticed the uptick in mental clarity. At the conclusion of the present care plan, after which the patient opted to stay on a lifestyle plan, he reported that despite the ever increasing workload, his productivity was still up and he was able to fit more into the time he has.

While this increase in mental clarity and productivity is entirely subjective and self-reported, it is notable as it added to his QoL and life satisfaction and links directly to larger studies covering the impact of Chiropractic care on the brain.

Further research is needed to ascertain the mechanisms behind, and the strength of, this effect, as well as to establish some clear parameters by which such improvements could be measured.

Discussion

Low back pain patients are in a group that has been well studied and in which brain changes have been seen post-Chiropractic care. Given that this patient falls into that category and also had a thoracic kyphosis and cervical subluxations, Chiropractic care may have contributed to the regulation of the nervous system and improved executive function. Unfortunately, changes in brain activity cannot be shown without fMRI scans. However the self-reported changes were significant enough for the patient to notice the increase in productivity and attribute it to Chiropractic care.

While one possibility behind the increase in mental clarity is certainly the above-mentioned evidence whereby Chiropractic care has been seen to elicit changes in the prefrontal cortex and other brain areas, this is not the only possibility behind the change.

Through Chiropractic care reducing the physical stress load on the body, it is feasible that the patient may have had more energy to use in manners he chooses, as opposed to spending that energy managing pain, stress, and dysfunction. In reducing the allostatic load and by adjusting subluxations that may have impeded his adaptability, the body may then have been able to thrive, expressed in increased mental clarity.

The third consideration in this case is the age of the patient. While many chiropractors advocate for care across the lifespan, few studies have examined benefits for the ageing. There is limited research examining whether Chiropractic care can increase mental clarity in older adulthood, or halt the progression of age-related or other neurodegeneration.

This case report therefore offers rationale for further research into Chiropractic care and productivity, ageing, and prevention of neurodegeneration, and may offer an insight into how Chiropractic can support individuals as they continue to contribute meaningfully to their communities in their later years.

Clare McIvor
BBus(Admin),
GD Comms(ProfWrit,Edit),
GD(Psych)(Cand)
Writer, ASRF

Ruth Postlethwaite
BBiomedSc
Writer, ASRF

Ryan Seaman
BChiro, BSc Chiro
Private practice of Chiropractic
Loxton, SA
President, ASRF
ryan@spinalresearch.com.au

Cite: Seaman R, Postlethwaite R, McIver C. Improvement in self-reported Mental Processing and Quality of Life in a 74-year old male concomitant with Chiropractic care for LBP: A case report. Asia-Pac Chiropr J. 2023;3.4. URL apcj.net/Papers-Issue-3-4/#SeamanMentalProcessing.

About the chiropractor

Ryan Seaman grew up in Saskatchewan Canada, before relocating to Perth, Australia in 2001. He trained first as a civil engineer before enrolling in Chiropractic at Murdoch University in WA in 2004. Ryan is the Principal practitioner at Seaman Chiropractic in South Australia, and is the current serving President of the Australian Spinal Research Foundation, having served on the board as the communications portfolio lead for several years prior to his appointment in 2021.

He and his wife Lynley live in Loxton, SA and are proud parents to three daughters.

References

1. Daligadu J, Haavik H, Yielder P, et al. (2013), "Alterations in Cortical and Cerebellar Motor Processing in Subclinical Neck Pain Patients Following Spinal Manipulation," JMPT Vol 36, Iss 8, October 2013 pp. 527-537, https://doi.org/10.1016/j.jmpt.2013.08.003
2. Baarbe J, Holmes M, Murphy H, et al. (2016), "Influence of Subclinical Neck Pain on the Ability to Perform a Mental Rotation Task: A 4-week Longitudinal Study with a Healthy Control Group Comparison," JMPT 39, Iss. 1, Jan 2016 pp. 23-30, https://doi.org/10.1016/j.jmpt.2015.12.002
3. Farid B, Yielder P, Holmes M, et al. (2018), "Association of Subclinical Neck Pain With Altered Multisensory Integration at Baseline and 4-Week Follow-up Relative to Asymptomatic Controls," JMPT 41 Number 2. Feb 2018, pp. 81-91
4. Lelic, D, Niazi, IK, Holt, K, et al. (2016), "Manipulation of dysfunctional spinal joints affects sensorimotor integration in the pre-frontal cortex: A brain source localization study," Neural Plasticity, Volume 2016 (2016). Online.
5. Ng, S. K., Urquhart, D. M., Fitzgerald, P. B., et al. (2018). The relationship between structural and functional brain changes and altered emotion and cognition in chronic low back pain brain changes: a systematic review of MRI and fMRI studies. Clin. J. Pain 34, 237–261. doi: 10.1097/AJP.0000000000000534
6. Tan, W., Wang, W., Yang, Y., et al. (2020), "Spinal Manipulative Therapy Alters Brain Activity in Patients With Chronic Low Back Pain: A Longitudinal Brain fMRI Study," Frontiers in Integrative Neuroscience, DOI: 10.3389/fnint.2020.534595
7. Niazi I, Turker K, Flavel S, et al. (2015), "Changes in H-Reflex and V-Waves following spinal manipulation," Experimental Brain Research, April 2015, Volume 233, Issue 4, pp. 1165-1173, retrieved 14 January 2019
8. Hays, R., & Morales, L., (2001). The RAND-36 Measure of Health-Related Quality of Life. Rand.org, retrieved 15 Marc 2023
9. Hays, R., Spritzer, K., Sherbourne, C., et al. (2019) Group and Indivdiual-Level Change on Health-related Quality of Life in Chiropractic Patients with Chronic Low Back or Neck Pain. Spine (Phila Pa 1976). 2019 May 1; 44(9): 647–651. doi: 10.1097/BRS.0000000000002902
10. Salik, E., Ozden, A, & Alptekin, H (2022). Chiropractic Care and Quality of Life Among Office Workers with Nonspecific Pain: A Cross-Sectional Study. Journal of Chiropractic Medicine. Vol. 21, Sep 2022, pp. 157-167. DOI 10.1016/j.jcm.2022.03.006
11. Alcantara, J., Lamont, A., Ohm, J., et al (2018) The Quality of Life of Children Under Chiropractic Care Using PROMIS-25: Results from a Practice-Based Research Network. The Journal of Alternative and Complementary Medicine. Apr 2018.378-384.http://doi.org/10.1089/acm.2017.0141
12. Hays, R., Shannon, Z., Long, C., et al. (2022) Health-Related Quality of Life Among United States Service Members with Low Back Pain Receiving Usual Care Plus Chiropractic Care vs Usual Care Alone: Secondary Outcomes of a Pragmatic Clinical Trial, Pain Medicine, Volume 23, Issue 9, September 2022, Pages 1550–1559, https://doi.org/10.1093/pm/pnac009