Sensations Experienced and Patients' Perceptions of Osteopathy in the Cranial Field Treatment

Sensations Experienced and Patients Perceptions of Osteopathy in the Cranial Field Treatment.

Jane Mulcahy PhD[1]
Brett Vaughan MHlthSc(Osteo)[1,2]

[1] Discipline of Osteopathic Medicine, College of Health & Biomedicine, Victoria University, Melbourne, Australia
[2] Institute for Sport, Exercise and Active Living, Victoria University, Melbourne, Australia

Address correspondence to:

Brett Vaughan
Osteopathy Unit
College of Health & Biomedicine
Flinders Lane Campus
Victoria University
PO Box 14428
Melbourne VIC 8001

Phone: +61 3 9919 1210
Fax: +61 3 9919 1030
E-mail: brett.vaughan@vu.edu.au

Word count: 4958

ABSTRACT

Osteopathy in the Cranial Field (OCF) is an approach used by manual and physical therapists. However, there is minimal information in the literature about patient experiences of this treatment. The present study was undertaken to explore patients' experiences of OCF. Patients completed the Patient Perception Measure - Osteopathy in the Cranial Field (PPM-OCF) and identified sensations they experienced during treatment. Additional measures of anxiety, depression, Satisfaction with Life (SWL) and Meaningfulness of Daily Activity (MDA) were completed.

The PPM-OCF was internally consistent (Cronbach's alpha 0.85). The most frequently experienced sensations of OCF patients were 'relaxed', 'releasing' and 'unwinding'. SWL and MDA were positively associated with PPM-OCF scores. Negative associations were observed between the PPM-OCF and depression.

Psychometric properties of PPM-OCF require further testing. The observed associations of SWL and depression with patients' perceptions of OCF treatment needs to be tested in larger clinical manual therapy cohorts.

Sensations Experienced and Patients Perceptions of Osteopathy in the Cranial Field Treatment.

INTRODUCTION

Osteopathy is a manual therapy used by less than 4% of the Australian population and of those who use osteopathy, only 6% of patients receive cranial osteopathic treatment.[1] Consequently there is little evidence in the research literature about OCF treatment outcomes.[2,3]

OCF as a technique cannot readily be measured by observers or accessed via organic measures of change such as pathology or radiology. Also the underlying theory of OCF technique has been questioned, including the reliability of palpating the cranial rhythmic impulse.[4-6]

Of those studies that have reported on the outcomes of OCF, they are typically small clinical samples or individual case studies,[7,8] and they do not use a standardised self-report measure of what the patient perceives actually happens during OCF treatment. Outcomes of a specific treatment cannot be determined unless the patient is asked about their perception of the treatment or intervention.[9-11] Subsequently, the Patient Perception Measure – Osteopathy in the Cranial Field (PPM-OCF) was developed to investigate patients' experiences of OCF treatment. In a previous paper the development of items for inclusion in the PPM-OCF were reported.[12] Subsequent papers by the same authors are currently being written with two additional osteopathic (non-OCF) clinical populations to establish the psychometric properties of a revised measure of Patient Perception Measure - Osteopathy (PPM-O).

There are individual patient characteristics such as age, gender, education, employment status, chronic illness and co-morbid illnesses that have previously been found to influence the use of complementary and alternative medicines.[13,14] Previous studies have also observed a

relationship between mental health (anxiety and depression), satisfaction with life (SWL), meaningfulness of daily activity (MDA), and perceived treatment outcomes, particularly for patients with chronic pain.[15-20] The presence of depression or anxiety has been associated with decreased treatment satisfaction and poorer patient outcomes.[21,22] Conversely, SWL and MDA have been associated with more favourable health behaviours and treatment outcomes.[23-27] When considering patients experience of OCF treatment, the relationship between patients' individual health and social factors and their experience of OCF must be taken into consideration.

The specific aim of the present study was to identify what OCF patients experienced during their treatment. Secondary aims were to explore the affect of depression, anxiety, satisfaction with life (SWL) and meaningful daily activity (MDA) on patients' perception of their OCF treatment.

METHODS

Ethics approval was obtained from the Victoria University Human Research Ethics Committee.

Participants

Two groups of participants were recruited: registered osteopaths in Australia and New Zealand who used OCF as their principal treatment approach, or as a substantial part of their treatment, and patients who attended OCF practitioners.

Osteopaths' were recruited from a list of practitioners who had completed post-registration training in OCF, provided by the Sutherland Cranial Teaching Foundation of Australia and New Zealand. The research packages were sent to osteopaths in Australia (N=5) and New Zealand (N=4) who agreed to be participants in the study. OCF patients were recruited by the osteopaths, because not all patients that the osteopaths were treating received OCF treatment at a consultation. OCF is used often in conjunction with other osteopathic techniques. Therefore the patients were recruited via a convenience sample by their treating osteopath.

Osteopaths invited 61 patients who satisfied the research criteria (adult, able to read and write English, able to give informed consent to participate) to complete the research package after their usual OCF treatment. OCF patients who volunteered for the study completed the research package including: consent form; patient demographic survey; PPM-OCF and Hospital Anxiety and Depression Scale.[28] Forty-two completed research packages were returned via pre-paid post to the researchers at Victoria University, this is equivalent to a response rate of 68.9%.

Measures

patient demographic survey

The patient demographic survey recorded the following demographics; sex, age, education, employment status, marital status, religion observation, past medical history and medication history and duration of their currently presenting condition. Additional data collected included the conditions currently being treated with OCF, and whether or not patients used other treatments in combination with OCF such as: Acupuncture, Chiropractic, Exercise, Homeopathy, Hospitalisation, Hydrotherapy, Massage, Medication, Myotherapy, Naturopathy, Occupational Therapy, Osteopathy, Physiotherapy, Pilates, and Surgery. Patients were also asked whether or not each of the additional treatments they used was helpful in managing their condition/s.

A list of 22 sensations and responses was included in the demographic survey and patients were required to tick whether or not they experienced any of the sensations or responses during their OCF treatment. The sensations included: Apathetic, Balancing, Centred, Cold, Depressed, Emotional, Energetic, Happy, Hardening, No Change, Nothing, Numb, Relaxed, Releasing, Restless, Sad, Softening, Straining, Tingling, Uncomfortable, Unwinding and Warmth.

Two single item Likert scale measures were included to assess the patient's overall global Meaningfulness of Daily Activity (*MDA*) and their current Satisfaction with Life (SWL). These items were: *Overall how meaningful are your daily activities?* and Overall *how satisfied are you*

with your life? Both of the measures were seven point Likert type scales ranging from 0 (not at all meaningful, not at all satisfied) to 6 (extremely meaningful, extremely satisfied), as depicted in the rating scales. The MDA Flesch-Kincaid Grade reading level was 10.8 and the Flesch reading ease 40.7. The SWL Flesch-Kincaid Grade reading level was 7.6 and Flesch reading ease 62.1, as assessed through Microsoft Word (Microsoft Corp, USA).[27]

patient Perception Measure-Osteopathy in the Cranial Field (PPM-OCF)

The PPM-OCF[12] is a 33 item self-report measure developed to identify patient perceptions of OCF treatment. Items were allocated to 1 of 6 theoretically constructed domains: *Education and Information* (5 items), *Efficacy/Satisfaction with Treatment* (5 items), *Physical Perception of Treatment* (9 items), *Therapeutic Relationship* (2 items), *Emotion/Mood* (9 items) and *Cognition* (3 items). Examples of the responses and scoring of individual PPM-OCF items are at Figure 1. The psychometric properties have been investigated previously (unpublished data) and modifications to the measure are currently being undertaken and tested in a non-OCF clinical population.

INSERT Figure 1 here

hospital Anxiety and Depression Scale (HADS)

The Hospital Anxiety and Depression Scale (HADS) is a brief self report screening measure, to identify possible cases of clinical anxiety and/or depression in a medical out-patient clinic, and takes the patient approximately 10 minutes to complete. The form consists of 7 depression items, and 7 anxiety items, these items are presented as alternative anxiety and depression

questions. Each of the 14 HADS items is scored from 0 to 3, and the total scores for the anxiety and depression subscales range from 0-21. Test authors report that the HADS is internally consistent and the Cronbach's alpha for HADS Depression was 0.90 and 0.93 for Anxiety. The measure requires the patient to select from four possible alternatives in response to each of the 14 questions.[28] The scores obtained from the HADS, have also been used to determine the presence and or severity of clinical disorders (Anxiety or Depression); where scores ranging from 0-7 indicate *No Disorder* (Normal*)*, 8 to 10 a *Mild Disorder*, 11 to 14 a *Moderate Disorder* and scores above 15 indicate there is a *Severe Disorder.*

Data analysis

Data were entered into and analysed using SPSS 20 (IBM Corp, USA). Descriptive data were compiled from the patient demographic survey as well as: duration of treatment, sensations experienced during OCF treatment, co-morbid conditions, and treatments used apart from OCF.

The SWL, MDA and HADS were scored as recommended by the authors[27,28] providing a measure of anxiety and depression, SWL and MDA. PPM-OCF item and total scores were calculated for each of the six domains: 1. Education/Information; 2. Satisfaction with Treatment; 3. Physical Perception of Treatment; 4. Therapeutic Relationship; 5. Emotion and Mood; and 6. Cognitive Functioning.

Data were not normally distributed therefore non-parametric inferential and correlation statistics were used for the analysis. The PPM-OCF total and domain scores were correlated with the MDA, SWL, and scores obtained on the HADS depression and anxiety subscales using

Spearman's *rho*. Number of pain sites, duration of pain, number of co-morbid health conditions, number of treatments used, and number of sensations experienced during OCF treatment affected PPM-OCF scores were also correlated with the total PPM-OCF score using Spearman's *rho*. The affect of demographic variables and sensations experienced during OCF treatment were tested with Mann-Whitney U tests or Kruskal-Wallis tests. Alpha was set at $p<0.05$. Internal consistency of the PPM-OCF and the HADS was calculated using Cronbach's alpha.

RESULTS

Participants

The demographic characteristics of patients who participated in this study are summarised in Table 1. There were no statistically significant differences in the total PPM-OCF score for gender, age, education, employment status, and relationship status, observance of a religion and pain duration. Females demonstrated a statistically significant higher mean score for Domain 2 Satisfaction with Treatment. A Mann-Whitney U Test revealed a significant difference in the Satisfaction with Treatment (Males: Md =20.50, n=8; females: Md=23.00, n=33; U=70.00, z=-2.058, p=0.04, r=-0.32).

INSERT Table 1 here

Reason for Attending OCF Practitioner

The most common reasons for attending for OCF treatment were neck and shoulder pain (21.4%) and lower back pain (14.3%). The number of pain sites identified by participants ranged from 1 (11.9%) to 7 (2.4%) sites. Most participants experienced either 3 (23.8%) or 4 (28.6%) pain sites. There were no significant correlations between the number of pain sites and PPM-OCF scores.

The chronicity of the disorders being treated was reflected in the duration of the condition that the patient was receiving OCF treatment for. There were 21.4% of patients with pain duration of 0-6 months, 14.2% (6-12 months), 2.4% (12-18 months) and 61.9% of patients had pain

duration of longer than 18 months. This chronicity may in part be attributed to the age of patients being predominantly over the age of 40 (73.81%) and being more likely to have either illnesses or injuries that require long-term management. However there were no significant correlations identified between pain duration and PPM-OCF scores.

Additional Health Issues Reported by OCF Patients

Of the major illnesses identified in Australia, both chronic and acute, the co-morbid conditions that were reported most often in the current sample were psychological distress (anxiety and depression) (Table 2). Of note was the higher prevalence in the current sample of patients who experienced anxiety than reported in the general Australian population. There was no correlation between the number of co-morbid health conditions and PPM-OCF scores.

INSERT Table 2 here

CAMS and Treatment Modalities

The number of treatments patients used ranged from 1-9 (mean 4.43 treatments) the most frequently associated treatments with osteopathy were exercise (61.9%), massage (45.2%) and Pilates (45.2%). Individual patients used 14 different treatments apart from OCF (Osteopathy) to manage their co morbid conditions and presenting conditions. The use of each allopathic and CAMS treatment is summarised in Figure 2. The combinations of treatments varied according to the co-morbid conditions individual patients had been diagnosed with and their personal characteristics. Spearman's *rho* failed to identify any significant relationship between the number of treatments used and PPM-OCF scores, and there were no statistically

significant differences in the total PPM-OCF score between those patients who did and did not undertake a particular treatment. Mann-Whitney Tests did not reveal any significant differences between any of the treatments used in conjunction with OCF and scores on the PPM-OCF ($p>0.05$).

INSERT Figure 2 here

For item 16 on the patient demographic survey "Have you noticed any difference since receiving OCF as part of your usual osteopathy treatment?" 78% responded *yes*, 19% responded *maybe*, and no OCF patients reported that their treatment had not made a difference. The majority of OCF patients would appear to have been satisfied with their treatment as 39/42 (92.9%) indicated they would recommend OCF to friends or family.

There were 23/42 (54.8%) of participants who reported they were taking medication prescribed by their doctor. Of the participants taking medication 54.7% took 1 medication only, 31% took 2 medications, 14.3% took 3 medications, 11.9% took 4 medications and only 4.8% (2 persons) took 5 medications. Pain medications had the highest incidence of use (21.4%). Other medications used by participants were prescribed for: respiratory conditions (11.9%); cardiac conditions (9.5%); hypertension (9.5%); high cholesterol (7.1%); hormone replacement therapy (7.1%); depression (7.1%) and cancer (4.8%). Less commonly used medications (2.4%) included anti-psychotics, anti-anxiety medications and thyroid medications. There was no statistically significant difference in the PPM-OCF total score between patients who reported using a medication and those who did not.

<u>Association between Measures</u>

Associations between the PPM-OCF and the other measures used in the study are summarised in Table 3.

INSERT Table 3 here

positive relationships

The six domains of the PPM-OCF were developed from the published literature pertaining to patient perception of physical therapies, including osteopathy.[12] In the current study the sample was small and it was not appropriate to perform any factor analysis on the data.

Correlation of the measures, including the PPM-OCF, confirmed that all of the six domains in the PPM-OCF were positively and significantly associated with the total PPM-OCF score. Table 3 also demonstrates there were positive and significant associations between SWL and Education and Information ($p<0.05$), Satisfaction with Treatment ($p<0.05$), Therapeutic Relationship ($p<0.05$), Emotion and Mood ($p<0.01$), Cognitive Functioning ($p<0.05$) and the total PPM-OCF score ($p<0.05$). There was also a significant positive association between MDA and PPM-OCF Satisfaction with Treatment ($p<.05$) and Emotion and Mood ($p<.05$), where higher scores on MDA were associated with higher scores on Satisfaction with Treatment and Emotion and Mood.

negative relationships

PPM-OCF Satisfaction with Treatment, Physical Perception of Treatment, Emotion and Mood, and the total PPM-OCF score were negatively associated with HADS Depression (Table 3).

Higher scores on Depression were significantly associated with lower scores of patient perception of OCF. Education and Information, Therapeutic Relationship and Cognitive Functioning were negatively associated with Depression, but these associations were not significant. Anxiety was not significantly associated with any of the PPM-OCF scores.

Sensations and Symptoms Experienced During OCF Treatment

The mean number and range of sensations experienced by participants during treatment were 4.5 (range 1-12). On the patient demographic survey there were 22 sensations to select from. Fifteen sensations were experienced during treatment by at least two participants and 20 of the 22 were selected by at least 1 participant. Figure 3 depicts 15 sensations participants experienced during OCF treatment (sensations with less than 2% of participants reporting the sensations were not included in Figure 3). Fifteen sensations that patients experienced were analysed to ascertain whether the PPM-OCF score or domain scores were significantly different for those patients who experienced the sensation versus those who did not. Domains 4 and 6 did not demonstrate any significant difference between those who experienced a sensation versus those who did not.

INSERT Figure 3 here

Patients who indicated that they experienced the Releasing sensation had significantly higher scores for domains 1, 3 and 5 as well as the total PPM-OCF score. Mann Whitney U Tests revealed significant differences. In domain 1 Education and Information, where patients who experienced a releasing sensation had higher scores than those who did not (Md =23.00, n=31 v Md=19.00, n=11; U=82.50, z=-2.53, p=0.011, r=-0.39). In domain 3 Physical Perception,

patients who experienced a releasing sensation had higher scores than those who did not (Md =32.00, n=31 v Md=27.00, n=11; U=73.00, z=-2.79, p=0.005, r=-0.43). Patients who experienced a releasing sensation also had higher scores on Domain 5 Emotion and Mood than those who did not (Md =39.00, n=29 v Md=37.00, n=11; U=91.50, z=-2.07, p=.0038, r=-0.33). While for the total PPM-OCF score patients who experienced a releasing sensation had higher scores than those who did not (Md =131.50, n=28 v Md=124.00, n=11; U=63.00, z=-2.84, p=0.004, r=-0.45).

Patients who experienced a Centred sensation had significantly higher scores for domain 1 and the total PPM-OCF score. Mann Whitney U Tests revealed significant differences in domain 1 Education and Information, where patients who experienced a centred sensation had higher scores than those who did not (Md =25.00, n=5 v Md=20.50, n=36; U=22.00, z=-2.72, p=0.004, r=-0.44). While for the total PPM-OCF score patients who experienced a centred sensation had higher scores than those who did not (Md =139.00, n=5 v Md=129.00, n=33; U=33.00, z=-2.14, p=0.032, r=-0.33).

Those patients who experienced a balancing sensation had significantly higher scores for domain 2 and 5. Mann Whitney U Tests revealed significant differences in domain 2 Satisfaction with Treatment, where patients who experienced a balancing sensation had higher scores than those who did not (Md =23.50, n=16 v Md=22.00, n=24; U=113.00, z=-2.20, p=.028, r=-0.35. While for domain 5 Emotion and Mood patients who experienced a balancing sensation had higher scores than those who did not (Md =40.00, n=16 v Md=138.00, n=23; U=114.00, z=-2.01, p=.044, r=-0.32.

Satisfaction with Life (SWL) and Meaningfulness of Daily Activities (MDA)

Descriptive statistics for the SWL and MDA are presented in Table 4. The majority of participants (99.9%) rated their SWL between “Occasionally Satisfied” (3) to “Extremely satisfied” (6). No participants reported feeling less than ‘occasionally satisfied with their life. On the MDA 88.1% of participants rated their MDA as being between (3) Occasionally Meaningful and (6) Extremely Meaningful, 2 participants did not find their daily activities to be “at all meaningful”.

INSERT Table 4 here

Patient Perception Measure of Osteopathy in the Cranial Field (PPM-OCF)

Descriptive statistics for each of the PPM-OCF subscales and total PPM-OCF score are summarised in Table 4. Internal consistency (a) of the PPM-OCF 33 item measure was 0.847 and the subscales ranged from 0.780 to 0.016. While the subscales may not reach acceptable levels of reliability, the overall measure is reliable. The measure requires modifications prior to further testing of the psychometric properties.

Hospital Anxiety and Depression Scale (HADS)

Descriptive statistics for the HADS are presented in Table 4. The majority of participants were within the normal ranges (0-7) for anxiety (73.2%) and depression (90.2%) as assessed on the Hospital and Anxiety and Depression subscales. There were 11 participants (26.8%) who were anxious and 4 participants (9.8%) who were depressed. One person did not complete an item related to anxiety, and one person did not complete an item related to depression. These

questionnaires were not included in the analysis. Mann Whitney U Tests revealed a significant difference in Domain 5 Emotion and Mood scores of depressed persons compared with those who were not depressed (Md =34.00, n=4 v Md=39.00, n=35; U=28.00, z=-1.96, p=0.05, r=-0.31). Mildly depressed patients had a lower score on Emotion and Mood (Md=34.00) than patients within the normal range for depression (Md=39.00).

DISCUSSION

The present study reports on the perceptions of 42 patients presenting to osteopaths for OCF treatment. Patients displayed a similar profile to previous research into Australian osteopathic practice. The PPM-OCF was used in the present study to assess what patients believed happened during treatment. Patients were also asked what sensations they experienced during treatment. The internal consistency of the measure was acceptable overall; however it requires modifications prior to testing on a larger clinical sample. Sensations experienced, gender, depression, SWL and MDA affected the patients' perception of their OCF treatment, as measured on the PPM-OCF. These factors need to be taken into consideration in clinical settings when patients' manual treatment outcomes are being evaluated.

A study on the complementary and alternative medicine (CAMS) use in Australia, stated females, aged 18-43,who were employed, well educated, with private health insurance coverage and with higher than average incomes tend to use more CAMS.[29] The patient cohort in the present study is predominantly female (78.6%), aged between 18-50 years of age (56.1%), educated to a tertiary degree level or higher (66.7%) and who were currently employed (66.7%). Therefore it can be deduced that the sample population in the present study represents on average, well educated people who are consequently more likely to be on higher levels of income and as a result are likely to use more CAMS. Consequently the current clinical sample, albeit small, is representative of the patients who use CAMS, including manual therapy in Australia.[10,29,30] Consistent with previous research into Australian osteopathic practice[1,31] the condition/s being treated were predominantly back pain (33.3%), neck pain (19.5%) and headaches (19.5%).

Age, education, employment status and marital status did not affect patients' perceptions of OCF treatment. There has been previous research that would refute this finding in that these demographic variables have been found to be related to the patient's satisfaction with manual and physical therapies.[32,33] Female OCF patients were however more satisfied with their treatment than males; females had significantly higher scores than males on Domain 2 Satisfaction with Treatment, (M 22.15, SD 2.32 v M 20.50, SD 1.93 respectively). This finding is in contrast to the review by Sitzia and Wood,[34] who reported that gender does not impact on patient satisfaction. It may be that there is a link between the gender of the practitioner and gender of the patient, as has previously been described.[35,36] However, this finding requires further testing in manual therapy samples.

The construct validity for the PPM-OCF is enhanced by the fact that the total PPM-OCF score was not influenced by the patient's current or previous use of other healthcare services. This is important to establish, as the patient's in the present study were utilising other healthcare services beyond osteopathic treatment, potentially for the same presenting complaint. The results suggest that the patient's are providing an isolated response to the PPM-OCF based on their experience with the osteopathic treatment.

Musculoskeletal pain and other major illnesses are common conditions.[37] In Australia persons who had a musculoskeletal disorder were 1.5 times as likely to report that they had a mental health disorder than those who did not have a musculoskeletal condition.[38] In the present study 26.2% of patients reported having an anxiety disorder compared to an overall prevalence rate of 3.8% in the Australian community. Whereas, the prevalence for depression was 9.4% compared with a population prevalence of 9.7%. It has previously been identified[39] that 12% of Australians have coexisting mental health disorders and a physical condition, and the most

common mental health disorder coexisting with a physical condition is anxiety, affecting 1.4 million Australians.[40] The prevalence of anxiety in the present study is still much higher than would have been anticipated and could be due to factors apart from musculoskeletal pain including: chronicity of pain, cause of pain, effectiveness of pain management treatments and regimens and life circumstances. It is not possible to determine the reason for the higher than anticipated prevalence of anxiety in this population of OCF patients, although it is an important consideration for OCF practitioners. To date there have been no studies located in the OCF literature that address the possible causes of higher prevalence of mental health problems in patients attending OCF, therefore the current observations cannot be compared with previous OCF clinical samples. However, these observations have been replicated in chronic pain samples[41-43] and will require further testing on larger osteopathy samples.

Anxiety was not associated with PPM-OCF scores and persons who were anxious did not significantly differ from those who were not anxious on the PPM-OCF. However depression was associated with PPM-OCF scores and patients who experienced mild depression had significantly lower scores on the PPM-OCF domain Emotion and Mood. This finding would tend to support the validity of domain 5 as a measure of Emotion and Mood, and being distinct from the other domains of the PPM-OCF.

The sensations that patients most often reported experiencing during their OCF treatment were positive and included: Relaxed (83.3%), Releasing (73.8%), Unwinding (57.1%), Warmth (45.2%), Balancing (40.5%) and Softening (40.5%). All of these sensations may be seen to be favourable, in that the outcomes for OCF patients who experienced these sensations would generally improve patients' symptoms and increase their sense of well-being. Patients who reported the sensation of Releasing had statistically significant higher total PPM-OCF scores

when compared with those that did not. Anecdotally, this sensation is one that is described by OCF practitioners, and it would be of interest to determine if the clinician providing the OCF treatment had actually used these, or similar, terms to describe the goals and/or effect of the treatment.

Negative sensations were experienced far less by OCF patients and included: Anxious (4.8%), Emotional (4.8%), Sad (4.8%), Uncomfortable (4.8%) and Restless (4.8%) and on further examination of the data, these sensations were experienced by patients who also had a co-morbid psychological disorder such as depression or anxiety. These negative sensations would not be perceived by patients as being consistent with an improvement in symptoms and well-being[44] and also have a negative relationship with emotional well-being and psychological health. Therefore there may have been a bias in patients not choosing these sensations due to the negative connotations associated with these terms. It cannot be substantiated that OCF patients commonly experience these sensations, because no studies describing the sensations experienced by OCF patients could be located. However, these sensations may be experienced in other manual therapy patients. Future studies should investigate whether these sensations are experienced with the application of other manual therapy techniques, or they are only experienced by patients with co-morbid anxiety or depression.

Satisfaction with life and meaningful daily activity as possible factors affecting patients outcomes of treatment have been previously reported in chronic pain samples[23,45,46] but not in the manual therapy literature. Patients' reported levels of SWL and MDA were positively associated with their perception of OCF treatment. Also depression and anxiety were negatively associated with SWL and depression was negatively associated with MDA. Higher scores on SWL were significantly related to higher scores on all of the PPM-OCF subscales

and total score, except for Physical Perception of Treatment. These findings would appear to be consistent with positive attitudes, expectations, and beliefs of patients being related to better outcomes and perceptions about therapeutic interventions for various illnesses.[47-50] These associations cannot be refuted or confirmed in the manual therapy literature and warrant further testing.

Of note was that Physical Perception of Treatment was not significantly associated with either Education and Information or Satisfaction with Treatment. These findings suggest that physical aspects of an OCF consultation are independent of education and satisfaction with treatment. However, Physical Perception of Treatment positively influenced the patient's overall perception of their treatment, including the Therapeutic Relationship, Emotion and Mood and Cognitive Functioning. Physical Perception of Treatment was also significantly and positively associated with experiencing the sensation of releasing during OCF treatment and negatively associated with depression. Persons who were depressed had lower scores on the Physical Perception of Treatment domain. This is not atypical of chronic pain patients who are depressed as they tend to have elevated scores on measures of pain and interference than those who are not depressed.[41,51,52]

Further investigation is required to explore the positive associations of SWL with perceived outcomes of OCF treatment and the negative associations of depression on manual therapy outcomes.[14,53] Currently there is no published manual therapy evidence to refute or support these associations. However, on the basis of current observations, it would appear that manual therapy practitioners should consider the routine screening of patients for depressive disorders and access patients' satisfaction with life.

For the present study, the primary limitation was the small sample size. The main reason was the small number of osteopaths who regularly use OCF as a technique.[1] Another reason for small sample size was that our study excluded patients under the age of 18 years. Many OCF practitioners treat children and these patients were excluded from our study. Furthermore, as the study was implemented in two countries, communication due to the time differences between Australia and New Zealand was a significant limitation. The issue of bias in OCF practitioners inviting patients who are favourably disposed towards OCF treatment and most likely to positively respond to the PPM-OCF is possible. The desire to favourably respond to items on the HADS and PPM-OCF is possible in a clinical sample,[54,55] and patients may have also responded favourably to items on the PPM-OCF to please their treating practitioner. However the conditions most often treated in the current study are consistent with other manual therapy samples and may be representative of manual therapy patients.

Despite the sampling limitations of the study, overall the PPM-OCF was reliable and appears to tap patient experiences of OCF that to date have not been reported in the manual therapy literature. The associations between sensations experienced, gender, positive and negative affect (depression, SWL and MDA) and patient perception of OCF has also been identified in this study and has implications for clinical practice.

CONCLUSION

In a clinical OCF sample, sensations that patients have reported they experienced during OCF treatment, affected the patients' perceived outcome of their treatment. This is particularly the case for those patients who reported they experienced a *Releasing* sensation during treatment. In that, PPM-OCF Education and Information, Physical Perception of Treatment, Emotion and Mood and the total PPM-OCF score were all significantly higher for patients who reported they experienced a *Releasing* sensation during treatment. Patients, who experienced a *Balancing* sensation during treatment, had higher scores on the PPM-OCF domain Satisfaction with Treatment. Female patients also reported higher levels of satisfaction with OCF treatment than male patients, but given the small sample in the current study and inconsistency with the patient satisfaction literature, this finding warrants further investigation.

An important outcome of this study is that the PPM-OCF is potentially a useful outcome measures for therapists to assess a patient's perceptions of their respective OCF treatments. The information obtained from the PPM-OCF may be used to refine the clinician's skills and attributes, and provide evidence for practice, in that a patient's perception of their treatment outcomes may be assessed and monitored with the PPM-OCF.

The observed association between depression, SWL, MDA and patients perception of their OCF treatment was an important finding and has clinical relevance for managing patients, particularly those patients who are depressed, not satisfied with life, or do not perform meaningful daily activities. These findings warrants further exploration in manual therapy regardless of the therapeutic techniques employed.

AUTHOR CONTRIBUTION STATEMENT

Both authors were involved in the literature review. JM conducted the data analysis. Both authors contributed to the development of the manuscript and approved the final version.

ACKNOWLEDGEMENTS

Thanks are extended to the osteopaths who agreed to participate in the study. Thanks are also extended to Pilar Munoz for her assistance in recruiting and distributing the survey to osteopaths in New Zealand. Also thanks are extended to Denise Cornall for her assistance in developing items for the PPM-OCF and providing contacts for osteopaths who practice OCF in Australia and New Zealand. The authors would also like to acknowledge the assistance of Jane Boadle who assisted with data entry.

REFERENCES

1. Burke SR, Myers R, Zhang AL. A profile of osteopathic practice in Australia 2010–2011: a cross sectional survey. *BMC Musculoskel Disord.* 2013;14(1):1-10.

2. Wyatt K. Cranial osteopathy for children with cerebral palsy: a randomised controlled trial. *Arch Dis Child.* 2011;96(6):505-512.

3. Kary D. Cranial palpation pressures used by osteopathy students. *J Am Osteopath Assoc.* 2009;109(7):378-379.

4. Moran R, Gibbons P. Intraexaminer and interexaminer reliability for palpation of cranial rhythmic impulse at the head and sacrum. *J Manipulative Physiol Ther.* 2001;24:183:190.

5. Sommerfeld P, Kaider A, Klein P. Inter- and intraexaminer reliability in palpation of the "primary respiratory mechanism" within the "cranial concept". *Man Ther.* 2004;9(1):22-29.

6. Zegarra-Parodi R, de Chauvigny de Blot P, Rickards LD, et al. Cranial palpation pressures used by osteopathy students: effects of standardized protocol training. *J Am Osteopath Assoc.* 2009;109(2):79-85.

7. Reid P, Pridmore S. Improvement in chronic pain with transcranial magnetic stimulation. *Aust N Z J Psychiatry.* 2001;35(2):252.

8. Cutler MJ, Holland BS, Stupski BA, et al. Cranial manipulation can alter sleep latency and sympathetic nerve activity in humans: A pilot study. *J Altern Complement Med.* 2005;11(1):103-108.

9. Schoenfelder T, Klewer J, Kugler J. Determinants of patient satisfaction: A study among 39 hospitals in an in-patient setting in Germany. *Int J Qual Health Care.* 2011;23(5):503-509.

10. Xue CCL, Zhang AL, Lin V, et al. Acupuncture, chiropractic and osteopathy use in Australia: a national population survey. *BMC Public Health.* 2008;8:105-112.

11. Hill S, Dziedzic KS, Nio Ong B. Patients' perceptions of the treatment and management of hand osteoarthritis: Afocus group enquiry. *Disabil Rehabil.* 2011;33(19/20):1866-1872.

12. Mulcahy J, Vaughan B, Boadle J, et al. Item development for a questionnaire investigating patient self reported perception, satisfaction and outcomes of a single osteopathy in the cranial field (OCF) treatment. *Int J Osteopath Med.* 2013;16(2):81-98.

13. Le Resche L. Sex, gender, and clinical pain. In: Flor H, Kalso E, Dostrovsky JO, eds. *Proceedings of the 11th World Congress on Pain*. Seattle: IASP Press; 2006:543-554.

14. Lee GK, Chronister J, Bishop M. The effects of psychosocial factors on quality of life among individuals with chronic pain. *Rehabil Couns Bull.* 2008;51(3):177-189.

15. Haythornthwaite JA. IMMPACT recommendations for clinical trials: opportunities for the RDC/TMD. *J Oral Rehabil.* 2010;37(10):799-806.

16. Smeeding SJ, Bradshaw DH, Kumpfer K, et al. Outcome evaluation of the Veterans Affairs Salt Lake City Integrative Health Clinic for chronic pain and stress-related depression, anxiety, and post-traumatic stress disorder. *J Altern Complement Med.* 2010;16:823-835.

17. Sparkes E, Raphael JH, Duarte RV, et al. A systematic literature review of psychological characteristics as determinants of outcome for spinal cord stimulation therapy. *Pain.* 2010;150(2):284-289.

18. Baker TA, Buchanan NT, Small BJ, et al. Identifying the relationship between chronic pain, depression, and life satisfaction in older African Americans. *Res Aging.* 2011;33(4):426-443.

19. Devins GM. Using the Illness Intrusiveness Ratings Scale to understand health-related quality of life in chronic disease. *J Psychosom Res.* 2010;68(6):591-602.

20. Mastos M, Miller K, Eliasson AC, et al. Goal-directed training: Linking theories of treatment to clinical practice for improved functional activities in daily life. *Clin Rehabil.* 2007;21(1):47-55.

21. McCracken LM, Evon D, Karapas ET. Satisfaction with treatment for chronic pain in a specialty service: Preliminary prospective results. *Eur J Pain.* 2002;6(5):387-393.

22. Von Essen L, Larsson G, Ãberg K, et al. "Satisfaction with care': Associations with health-related quality of life and psychosocial function among Swedish patients with endocrine gastrointestinal tumours. *Eur J Cancer Care (Engl).* 2002;11(2):91-99.

23. Cohn MA, Fredrickson BL, Brown SL, et al. Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion.* 2009;9(3):361-368.

24. Compton WC. Meaningfulness as a mediator of subjective well-being. *Psychol Rep.* 2000;87(1):156-160.

25. Vittersø J, Søholt Y. Life satisfaction goes with pleasure and personal growth goes with interest: Further arguments for separating hedonic and eudaimonic well-being. *J Posit Psychol.* 2011;6(4):326-335.

26. Jason LA, Timpo P, Porter N, et al. Activity logs as a measure of daily activity among patients with chronic fatigue syndrome. *J Ment Health.* 2009;18(6):549-556.

27. Mulcahy J. *Meaningful daily activity and chronic pain*. Melbourne: School of Psychology, Victoria University; 2011.

28. Zigmond AS, Snaith RP. The hospital anxiety and depression scale. *Acta Psychiatr Scand.* 1983;67(6):316-370.

29. Xue CCL, Zue AL, Zhang VL, et al. Complementary and alternative medicine use in Australia: A national population-based survey. *J Altern Complement Med.* 2007;13(6):643-650.

30. Armstrong AR, Thiebaut SP, Brown LJ. Australian adults use complementary and alternative medicine in the treatment of chronic illness: a national study. *Aust N Z J Public Health.* 2011;35(4):384-390.

31. Orrock PJ. Profile of members of the Australian Osteopathic Association: Part 2–The patients. *Int J Osteopath Med.* 2009;12(4):128-139.

32. Beattie P, Pinto M, Nelson M, et al. Patient satisfaction with outpatient physical therapy: instrument validation. *Phys Ther.* 2002;82(6):557-564.

33. Monnin D, Perneger TV. Scale to measure patient satisfaction with physical therapy. *Phys Ther.* 2002;82(7):682-691.

34. Sitzia J, Wood N. Patient satisfaction: a review of issues and concepts. *Soc Sci Med.* 1997;45(12):1829-1843.

35. Schmittdiel J, Grumbach K, Selby JV, et al. Effect of physician and patient gender concordance on patient satisfaction and preventive care practices. *J Gen Intern Med.* 2000;15(11):761-769.

36. Bertakis KD, Franks P, Azari R. Effects of physician gender on patient satisfaction. *J Am Med Wom Assoc.* 2002;58(2):69-75.

37. Australian Institute of Health and Welfare. *Australia's health 2012. Australia's health series no.13. Cat. no. AUS 156.* Canberra: AIHW;2012.

38. Australian Institute of Health and Welfare (AIHW). *When musculoskeletal conditions and mental disorders occur together.* Canberra: AIHW;2010. Cat. no. AUS 129.

39. Australian Bureau of Statistics. *Australian Health Survey: First Results, 20011-2012.* Canberra, Australia2012. 4364.0.001.

40. Australian Institute of Health and Welfare. *Co morbidity of mental disorders and physical conditions.* Canberra, Australia2012.

41. Alschuler KN, Theisen-Goodvich ME, Haig AJ, et al. A comparison of the relationship between depression, perceived disability, and physical performance in persons with chronic pain. *Eur J Pain.* 2008;12(6):757-764.

42. Aragonès E, Piñol JL, Labad A. Depression and physical comorbidity in primary care. *J Psychosom Res.* 2007;63(2):107-111.

43. Shaw WS, Means-Christensen AJ, Slater MA, et al. Psychiatric disorders and risk of transition to chronicity in men with first onset low back pain. *Pain Med.* 2010;11(9):1391-1400.

44. Chmiel M, Brunner M, Martin R, et al. Revisiting the Structure of Subjective Well-Being in Middle-Aged Adults. *Soc Indic Res.* 2012;106(1):109-116.

45. Gamble A, Gärling T. The Relationships Between Life Satisfaction, Happiness, and Current Mood. *J Happiness Stud.* 2012;13(1):31-45.

46. Silvemark AJ, Källmén H, Portala K, et al. Life satisfaction in patients with long-term non-malignant pain -- relating LiSat-11 to the Multidimensional Pain Inventory (MPI). *Health Qual Life Outcomes.* 2008;6:1-10.

47. Fournier M, de Ridder DTD, Bensing JM. Optimism and adaptation to chronic disease: The role of optimism in relation to self-care options of type I diabetes mellitus, rheumatoid arthritis and multiple sclerosis. *Br J Health Psychol.* 2002;7:409-432.

48. Brenes GA, Rapp SR, Rejeski WJ, et al. Do optimism and pessimism predict physical functioning? *J Behav Med.* 2002;25(3):219.

49. Kalauokalani D, Cherkin DC, Sherman KJ, et al. Lessons from a trial of acupuncture and massage for low back pain - Patient expectations and treatment effects. *Spine.* 2001;26(13):1418-1424.

50. Scheier MF, Carver CS. Optimism, coping, and health: Assessment and implications of generalized outcome expectancies. *Health Psychol.* 1985;4(3):219-247.

51. Esteve R, Ramírez-Maestre C, López-Martínez AE. Adjustment to Chronic Pain: The Role of Pain Acceptance, Coping Strategies, and Pain-Related Cognitions. *Ann Behav Med.* 2007;33(2):179-188.

52. Fishbain DA. The pain-depression relationship. *Psychosomatics.* 2002;43(4):341.

53. Fortune G, Barrowclough C, Lobban F. Illness representations in depression. *Br J Clin Psychol.* 2004;43(4):347-364.

54. Furnham A. Response bias, social desirability and dissimulation. *Pers Individ Dif.* 1986;7(3):385-400.

55. Cheung C-k, Ngan R. Filtered Life Satisfaction and Its Socioeconomic Determinants in Hong Kong. *Soc Indic Res.* 2012;109(2):223-242.

Table 1. Patient demographic characteristics.

Patient Characteristics	Number (%)
Gender	
Males	9 (21.4)
Females	33 (78.6)
Age Category	
20-30	4 (9.5)
31-40	7 (16.7)
41-50	13 (31.0)
51-60	10 (23.8)
61-70	6 (14.3)
71+	2 (4.8)
Education	
Some Secondary Schooling	3 (7.1)
Completed Secondary School	8 (19)
Apprenticeship/Trade certificate	1 (2.4)
TAFE or Vocational Education	2 (4.8)
University Degree	10 (23.8)
Post graduate Qualifications	11 (26.2)
Professional Registration	7 (16.7)
Employment Status	
Casual	2 (4.8)
Full time	19 (45.2)
Part Time	7 (16.7)
Pension	2 (4.8)
Retired	7 (16.7)
Unemployed	3 (9.7)
Unemployment Benefits	1 (2.4)
F/T student	1 (2.4)
Relationship Status	
Married	26 (61.9)
De Facto	9 (21.4)
Single	2 (4.8)
Divorced	3 (7.1)
Widowed	2 (4.8)
Observe Religion	
Yes	13 (31)
No	29 (69)

Table 2. OCF patients' prevalence of medical conditions compared with Australian general population prevalence (2011-2012).

Medical Condition	OCF Patients Reporting the Condition (YES)	Australian Population 18-65 years Prevalence [a,b]
Anxiety	11 (26.8%)	3.8%[a]
Arthritis	2 (4.8%)	14.8%[a]
Cancer	3 (7.1%)	Not Available[a]
Depression	4 (9.36%)	9.7%[a]
Diabetes mellitus	0	4.0%[a]
Heart disease	3 (7.1%)	4.7%[a]
Hypertension	4 (9.5%)	21.5%[a]
High cholesterol	3 (7.1%)	6.0%[b]
Osteoporosis	4 (9.5%)	3.3%[a]

a. Australian Bureau of Statistics (2013) Australians Health Survey: First Results 2011-2012,4364.0.55.001 NB prevalence of arthritis, diabetes, heart disease, hypertension, high blood pressure and osteoporosis increased with age

b. Australian Institute of Health and Welfare (2012) Source Australia's Health 2012.

Table 3. Associations between SWL, MDA, anxiety, depression and PPM-OCF.

Correlations

Measure	SWL	MDA	HADSa	HADSd	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Total PPM-OCF
Satisfaction with Life (SWL)	1.00										
Meaningfulness of Daily Activities (MDA)	.58**	1.00									
HADS Anxiety Score (HADSa)	-.44**	-.28	1.00								
HADS Depression Score (HADSd)	-.66**	-.42**	.63**	1.00							
1 Education and Information	.37*	.19	.18	-.14	1.00						
2 Satisfaction with Treatment	.33*	.40*	-.15	-.35*	.37*	1.00					
3 Physical Perception of Treatment	.25	.20	-.08	-.33*	.20	.29	1.00				
4 Therapeutic Relationship	.38*	.09	.01	-.28	.67**	.44**	.40**	1.00			
5 Emotion and Mood	.40**	.35*	-.09	-.34*	.40*	.44**	.64**	.53**	1.00		
6 Cognitive Functioning	.32*	.14	-.10	-.29	.31*	.10	.40**	.29	.43**	1.00	
Total PPM-OCF Score	.40*	.25	.01	-.36*	.67**	.56**	.74**	.72**	.81**	.56**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4. Descriptive statistics and internal reliability of the outcome measures used.

Measure/Domain	N	Mean	SD	Median	Range	a
Satisfaction with Life (SWL)	42	4.79	0.84	5.00	3	
Meaningfulness of Daily Activities (MDA)	42	4.88	1.13	5.00	5	
HADS Anxiety Score (1-21)	41	6.05	3.57	6.00	14	.826
HADS Depression Score (1-21)	40	3.23	2.73	3.00	8	.769
Number of Sites of Pain	40	3.23	1.37	3.00	6	
Number of Sensations Reported During Treatment	41	4.59	2.46	5.00	11	
Number of Treatments Used	42	4.33	2.03	4.00	8	
PPMOCF Domain 1 Education and Information- 5 items	42	21.00	3.39	21.00	12	.790
PPM-OCF Domain 2 Satisfaction with Treatment- 5 Items	41	21.83	2.32	22.00	10	.767
PPM-OCF Domain 3 Physical Perception of Treatment - 9 items	42	30.76	3.64	31.00	16	.546[a]
PPM-OCF Domain 4 Therapeutic Relationship - 2 items	42	9.10	0.85	9.00	3	.016[b]
PPM-OCF Domain 5 Emotion and Mood - 9 items	40	38.13	3.34	38.50	14	.594[c]
PPM-OCF Domain 6 Cognitive Functioning- 3 items	40	11.55	1.83	12.00	7	.044[d]
Total PPM- OCF Score all items	39	131.77	11.27	130.00	56	.847

Legend
a = Cronbach's alpha
[a] if item 22 deleted a = 0.595
[b] 2 items only in this domain Cronbach's reliability not appropriate
[c] if item 29 deleted a = 0.739
[d] 3 items only in this domain alpha reliability not appropriate

Table 1. Patient demographic characteristics.

Patient Characteristics	Number (%)
Gender	
Males	9 (21.4)
Females	33 (78.6)
Age Category	
20-30	4 (9.5)
31-40	7 (16.7)
41-50	13 (31.0)
51-60	10 (23.8)
61-70	6 (14.3)
71+	2 (4.8)
Education	
Some Secondary Schooling	3 (7.1)
Completed Secondary School	8 (19)
Apprenticeship/Trade certificate	1 (2.4)
TAFE or Vocational Education	2 (4.8)
University Degree	10 (23.8)
Post graduate Qualifications	11 (26.2)
Professional Registration	7 (16.7)
Employment Status	
Casual	2 (4.8)
Full time	19 (45.2)
Part Time	7 (16.7)
Pension	2 (4.8)
Retired	7 (16.7)
Unemployed	3 (9.7)

Unemployment Benefits	1 (2.4)
F/T student	1 (2.4)
Relationship Status	
Married	26 (61.9)
De Facto	9 (21.4)
Single	2 (4.8)
Divorced	3 (7.1)
Widowed	2 (4.8)
Observe Religion	
Yes	13 (31)
No	29 (69)

Table 2. OCF patients' prevalence of medical conditions compared with Australian general population prevalence (2011-2012).

Medical Condition	OCF Patients Reporting the Condition (YES)	Australian Population 18-65 years Prevalence [a,b]
Anxiety	11 (26.8%)	3.8%[a]
Arthritis	2 (4.8%)	14.8%[a]
Cancer	3 (7.1%)	Not Available[a]
Depression	4 (9.36%)	9.7%[a]
Diabetes mellitus	0	4.0%[a]
Heart disease	3 (7.1%)	4.7%[a]
Hypertension	4 (9.5%)	21.5%[a]
High cholesterol	3 (7.1%)	6.0%[b]
Osteoporosis	4 (9.5%)	3.3%[a]

a. Australian Bureau of Statistics (2013) Australians Health Survey: First Results 2011-2012,4364.0.55.001 NB prevalence of arthritis, diabetes, heart disease, hypertension, high blood pressure and osteoporosis increased with age
b. Australian Institute of Health and Welfare (2012) Source Australia's Health 2012.

Table 3. Associations between SWL, MDA, anxiety, depression and PPM-OCF.

Correlations

Measure	SWL	MDA	HADSa	HADSd	Domain 1	Domain 2	Domain 3	Domain 4	Domain 5	Domain 6	Total PPM-OCF
Satisfaction with Life (SWL)	1.00										
Meaningfulness of Daily Activities (MDA)	.58**	1.00									
HADS Anxiety Score (HADSa)	-.44**	-.28	1.00								
HADS Depression Score (HADSd)	-.66**	-.42**	.63**	1.00							
1 Education and Information	.37*	.19	.18	-.14	1.00						
2 Satisfaction with Treatment	.33*	.40*	-.15	-.35*	.37*	1.00					
3 Physical Perception of Treatment	.25	.20	-.08	-.33*	.20	.29	1.00				
4 Therapeutic Relationship	.38*	.09	.01	-.28	.67**	.44**	.40**	1.00			
5 Emotion and Mood	.40**	.35*	-.09	-.34*	.40*	.44**	.64**	.53**	1.00		
6 Cognitive Functioning	.32*	.14	-.10	-.29	.31*	.10	.40**	.29	.43**	1.00	
Total PPM-OCF Score	.40*	.25	.01	-.36*	.67**	.56**	.74**	.72**	.81**	.56**	1.00

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 4. Descriptive statistics and internal reliability of the outcome measures used.

Measure/Domain	N	Mean	SD	Median	Range	a
Satisfaction with Life (SWL)	42	4.79	0.84	5.00	3	
Meaningfulness of Daily Activities (MDA)	42	4.88	1.13	5.00	5	
HADS Anxiety Score (1-21)	41	6.05	3.57	6.00	14	.826
HADS Depression Score (1-21)	40	3.23	2.73	3.00	8	.769
Number of Sites of Pain	40	3.23	1.37	3.00	6	
Number of Sensations Reported During Treatment	41	4.59	2.46	5.00	11	
Number of Treatments Used	42	4.33	2.03	4.00	8	
PPMOCF Domain 1 Education and Information- 5 items	42	21.00	3.39	21.00	12	.790
PPM-OCF Domain 2 Satisfaction with Treatment- 5 Items	41	21.83	2.32	22.00	10	.767
PPM-OCF Domain 3 Physical Perception of Treatment - 9 items	42	30.76	3.64	31.00	16	.546[a]
PPM-OCF Domain 4 Therapeutic Relationship - 2 items	42	9.10	0.85	9.00	3	.016[b]
PPM-OCF Domain 5 Emotion and Mood - 9 items	40	38.13	3.34	38.50	14	.594[c]
PPM-OCF Domain 6 Cognitive Functioning- 3 items	40	11.55	1.83	12.00	7	.044[d]
Total PPM- OCF Score all items	39	131.77	11.27	130.00	56	.847

Legend
a = Cronbach's alpha
[a] if item 22 deleted a = 0.595
[b] 2 items only in this domain Cronbach's reliability not appropriate
[c] if item 29 deleted a = 0.739
[d] 3 items only in this domain alpha reliability not appropriate

The instructions my osteopath gives me regarding my home exercise program are

1	2	3	4	5
¨ POOR	¨ FAIR	¨ GOOD	¨ VERY GOOD	¨ EXCELLENT

My osteopath treats me with respect

1	2	3	4	5
¨ NEVER	¨ RARELY	¨ SOMETIMES	¨ MOSTLY	¨ ALWAYS

Figure 1. Sample items and scoring method from the PPM-OCF.

Figure 2. Percentage of OCF patients who used other treatments.

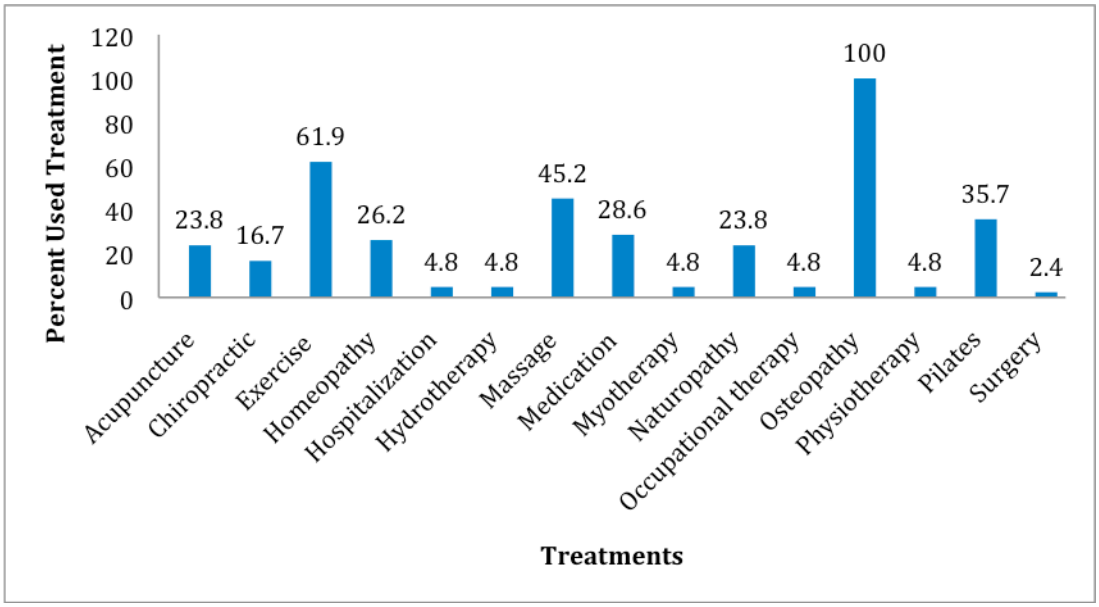
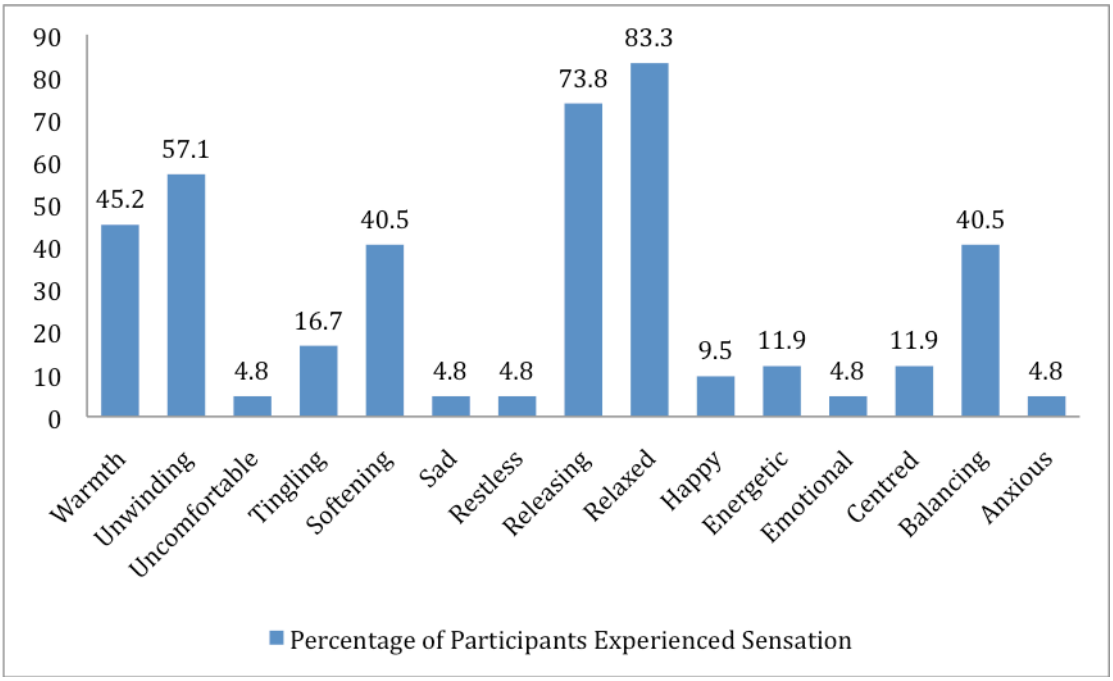


Figure 3. Sensations experienced by OCF patients during their treatment.



FUNDING

No funding was received for this study.

CONFLICT OF INTEREST

The authors report no conflict of interest in relation to this study.

ETHICAL APPROVAL

The study was approved by the Victoria University Human Research Ethics Committee (HRETH 11-226).