Assessing the feasibility of applying a combined osteopathy and psychoeducation therapy (OsteoPeCT) and its influence on levels of psychological and physiological stress in adult participants with moderate stress: A pilot study

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Research

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Abstract

Background: There is mounting evidence suggesting a relationship between stress and adverse health outcomes. Stress is a multidimensional phenomenon requiring a multimodal approach. While there is some evidence indicating a positive effect of massage therapy, there is limited research regarding the impact of related approaches such as general osteopathic techniques (GOTs). Further, research examining the feasibility and effectiveness of combining GOTs with psychoeducation in the management of stress is lacking. The present pilot study aimed to assess the feasibility of applying a therapy package consisting of GOTs and brief psychoeducation and its influence on moderate stress in a convenience sample.

Methods: A pilot uncontrolled trial with mixed pragmatic and exploratory design was conducted. The therapy package comprised of ten GOTs and ten minutes of scripted psychoeducation (OsteoPeCT) was applied in two sessions over two consecutive days to 18 adult participants with moderate stress. Feedback from participants and challenges experienced by both participants and researchers were recorded. The effects of OsteoPeCT were assessed by measuring pre- and post- intervention scores of self-reported perceived stress (Perceived Stress Scale-10, PSS-10; Profile of Mood Scale, POMS) and salivary levels of physiological stress biomarkers (cortisol; secretory immunoglobulin A, sIgA and interleukin-6, IL-6).

Results: All aspects related to the application of OsteoPeCT (participant recruitment, participant retention, therapy application, administration of health screen and self-reported perceived stress questionnaires, and the collection of saliva samples for biomarker analysis) were feasible. A total of 18 participants were enrolled. The timing of sessions on consecutive days was reported to be challenging. While a measurable decrease in perceived stress (PSS-10) and in mood scores (Tense, Fatigue, Depression, Anger) were noted post therapy (OsteoPeCT) application, physiological stress markers were unaffected. Diurnal variations of these biomarkers may need further consideration.

Conclusion: The application of OsteoPeCT was feasible, well received with some beneficial influence on perceived stress indicating that an integration of psychoeducation and osteopathic care may confer benefits to patients. Future investigations with adapted protocols and larger sample size is warranted to assess effectiveness.

Trial registration: Retrospectively registered in Australian New Zealand Clinical Trials Registry (registration number ACTRN12620000763943) and ICTRP .

Full Text

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Tables

Table 1-Inclusion and exclusion criteria for participant recruitment

Key inclusion criteria	<ul style="list-style-type: none">● Participants (females and males) over the age of 18● Able to communicate in English● The ability to provide informed consent● The presence of moderate stress levels (>14 on the PSS-10) at the time of screening (Healthy volunteers were not allowed to participate)
Key exclusion criteria	<ul style="list-style-type: none">● Presence of any pathological conditions including diabetes, Addison's disease, hypopituitarism, Cushing's syndrome, heart conditions, arthritis, any known chronic inflammatory condition and/or cancer)● Breathing difficulties● Hypertension (controlled by medication)● Current musculoskeletal condition or injury● Neurological symptoms (numbness, tingling, nausea, vomiting, sense of weakness)● Presence of any oral disease

PSS-10 =Perceived Stress Scale-10

Table 2 – Participant characteristics

Participant ID number (#)	Sex	Age	Marital status	Blood pressure (mmHg)	Heart rate (bpm)	Height (cm)	Weight (kg)	Body Mass Index (BMI) (kg/m ²)	Systems Review (presence/indication of any issues)	General Health	Ne Sy:
1	F	31	S	122/82	82	168	67	23.7	N	N	N
2	F	22	R	111/69	61	158	63	25.2	N	N	N
3	F	23	R	112/68	78	167	63	22.6	Y (Fungal infection)	N	Y (He
4	F	27	Md	110/74	56	182	66	19.9	N	N	N
5	F	51	Md	118/84	79	157	51	20.7	Y (Fungal infection)	N	N
6	F	58	Md	118/89	78	177	78	24.9	Y (Musculoskeletal injury)	N	N
7	F	21	S	116/80	62	170	68	23.5	N	N	N
8	F	28	Md	110/75	51	165	72	26.4	N	N	N
9	F	28	Md	120/81	41	176	70	22.6	N	N	N
10	F	53	D	117/77	76	172	78	26.4	N	Y (Fatigue)	Y (M

11	F	29	S	130/87	89	152	86	37.2	Y (Asthma – mild, controlled with Ventolin)	N	Y (Ht
12	M	43	Md	130/70	80	173	81.5	27.4	P (Allergies)	P (Weakness)	NP
13	M	28	R	160/80	40	192	93	25.2	NP	(Heartburn)	NP
14	M	29	Md	122/81	60	182	80	24.2	P (History of Jaundice and inflammatory condition)	P (weight-gain)	NP
15	M	52	Md	132/82	68	184	102	30.1	P (Allergies and history of musculoskeletal condition)	NP	NP
16	M	44	Md	120/80	72	188	90	25.5			
17	M	23	R		Y (history of asthma and musculoskeletal condition)	P (Weight loss, fatigue and weakness)	P (numbness, memory loss and headaches)	No saliva collected at Timepoint 1			
18	M	22	R	119/70	64	180	100	30.9	NP	P (weight gain)	NP

Married = Md, Relationship = R, Single = S, Divorced = D

Y = Present, N = Not indicated

Table 3 – Challenges encountered by participants

Category/ item	Description	Rationale for design	Challenge encountered
Time of the therapy session	8-10 am	Participants were required to attend each consecutive session at 8-9:30 am to achieve consistency and reliability with the selected salivary biomarkers, as these biomarkers show diurnal variation.	Early morning appointments on two consecutive sessions proved difficult for participants with early morning weekday commitments.
Therapy sessions	Approximately one hour, on two consecutive days (Monday and Tuesday)	As the intervention only ran for two days, having the two sessions 24 hours apart lasting approximately 1 hour was chosen for consistency.	Arranging/organising two consecutive days were difficult for some participants in light of their daily life commitments, i.e. work. Furthermore, peak hour traffic and the clinic's location off a busy main road added to difficulties.

Table 4 – Challenges encountered by the Osteopath researchers

Category/item	Description	Reason/explanation	Challenge encountered
Recruitment process	Errors made with initial PSS-10 scores for three participants (#1, #2 and #4)	Osteopath researcher made an error in scoring, which led to the inclusion of three participants who scored <14.	Data analysis and interpretation. Three participants (#1, #2, #4) were included in the study although scored <14 PSS-10 due to nature and aim of the study. This included -
Therapy sessions	Feasibility regarding the timing of the sessions and consecutive days.	Timing – 8-10 am decided to avoid diurnal variation observed in the selected biomarkers. Two consecutive days of the week: The study was run as part of the student osteopaths' research for their Masters, alongside completing clinical hours, which is a compulsory component for their studies.	The two available dates were mid-working week, which became difficult for the student researchers to liaise with their participants. In addition, due to the selection of the times (8-10 am) the participants encountered challenges with arriving on-time (between 5-20 minutes late).
Collection of saliva samples	Difficulty collecting saliva from participant, #5 #2, #4, #10 and #12.	It took nine minutes to collect and fill two cryotubes with saliva for participant #5 at TP1. It took between 5-7 minutes to collect saliva from participants #4 and #10 at TP1. Participant #4 had a coffee at 6:30 am that morning. Participant #12 could not produce any saliva.	Participants who could not produce saliva as easily appeared more stressed and agitated. Not producing enough saliva may have caused participants to feel tense, further increasing stress levels.

Timepoint = TP

Figures

Figure 1.

Figure 1

Consort flow diagram showing participant flow at each stage of the trial (enrolment through analysis).

Figure 2

Figure 2

PRECIS-2 Wheel score for the study. 'Setting and organization' rated as rather pragmatic, 'eligibility' rated as very exploratory; 'recruitment', 'primary analysis' and 'flexibility: adherence' read as rather exploratory; 'flexibility: delivery', 'follow-up' and 'primary outcome' rated as mixed pragmatic and exploratory. Total score was 26.

Figure 3

Bar graph showing the mean PSS-10 scores from all 18 participants at time point 1, 2, 3 and 4. Error bars are SEM. * represents adjusted p value <0.05, ** represents adjust p value 0.01, *** represents adjusted p value <0.001. Pink data values denote female participants and blue data values denote males.

Figure 4

Bar graphs showing the mean POMS scores from all 18 participants for fatigue, tense, anger and depressed subscales. POMS fatigue scores (A), POMS tense scores (B), POMS anger scores (C), and POMS depressed (D) scores at time point 1, 2, 3 and 4. Error bars are SEM. * represents adjusted p value <0.05, ** represents adjust p value 0.01, *** represents adjusted p value <0.001. Pink data values denote female participants and blue data values denote males.

Figure 5

Figure 5

Bar graphs showing the mean concentration of stress related saliva biomarkers from all 18 participants. The concentration of cortisol (A), IL-6 (B) and sIgA (C) at time point 1, 2, 3 and 4. Pink data values denote female participants and blue data values denote males.

Supplementary Files

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