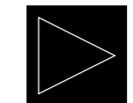


The Osteopathic Approach to Chronic Pain Management: Assessing its Biopsychosocial Processes and Relationships to Clinical Outcomes

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PRECISION
Pain Research Registry
Where Science Meets Practice

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BACKGROUND

The establishment of a single accreditation system for graduate medical education in the United States potentially signals a convergence of osteopathic and allopathic medicine. This study aims to determine if there are important differences in how osteopathic physicians (DOs) and allopathic physicians (MDs) manage chronic low back pain, including in prescribing such medications as nonsteroidal anti-inflammatory drugs (NSAIDs) or opioids, and in minimizing pain catastrophizing and promoting pain self-efficacy among their patients.

This study will assess how aspects of the biopsychosocial model may be manifested in differences between patients with chronic low back pain who are treated by DOs or MDs. The osteopathic approach to chronic pain management is thought to be distinctively based on osteopathic principles (Figure 1).

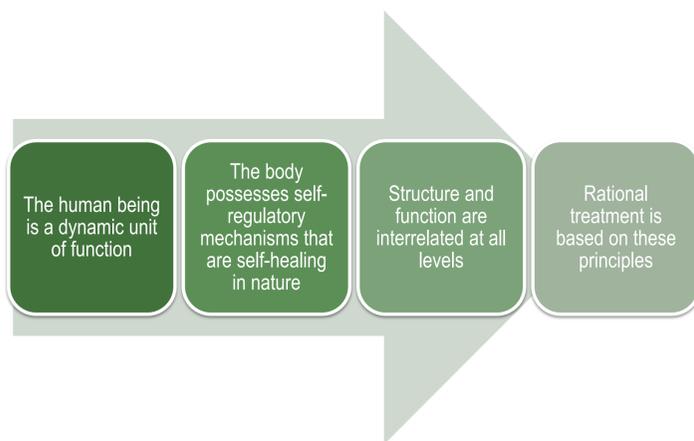


Figure 1. Four key principles of osteopathic philosophy.

Based on osteopathic philosophy and previous research, we hypothesize that DOs will less often prescribe pain medications and have patients who score better on pain catastrophizing and pain self-efficacy measures.

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MATERIALS AND METHODS

Patient Selection

A total of 345 patients were selected for study from the Pain Registry for Epidemiological, Clinical, and Interventional Studies and Innovation (PRECISION Pain Research Registry) at the University of North Texas Health Science Center from April 2016 through April 2019.

The Dallas-Fort Worth metroplex of over 7 million persons served as the catchment area for the registry during this period. Patient selection criteria included: (1) being 21 to 79 years of age; (2) having chronic low back pain according to criteria established by the National Institutes of Health Task Force on Research Standards for Chronic Low Back Pain [1]; (3) having sufficient English fluency to respond to study research instruments; and (4) having the same physician for low back pain care for at least 1 year. Patients were excluded if they reported being pregnant or institutionalized.

Data Collection

Current use of NSAIDs and opioids was assessed at the baseline visit. The Pain Catastrophizing Scale (PCS) [2] and Pain Self-Efficacy Questionnaire (PSEQ) [3] were also administered to patients at this visit. The research protocol was approved by the North Texas Regional Institutional Review Board (#2015-169). All eligible patients provided written informed consent prior to enrolling in the registry and participating in the study.

Data Analyses

Differences in the frequencies of use of NSAIDs or opioids in patients treated by DOs or MDs were assessed using contingency table methods, including odds ratios (ORs) and 95% confidence intervals (CIs). The underlying distributions of PCS and PSEQ measures were examined for adherence to the assumption of normality using the Kolmogorov-Smirnov test. Differences between patients treated by DOs or MDs were then tested with the Mann-Whitney U-test. Statistical analyses were performed with the IBM SPSS Statistics software (version 23, Armonk, NY). All hypotheses were tested at the 0.05 level of statistical significance using two-sided alternatives.

RESULTS

A total of 100 (29.0%) patients were treated by DOs. There were no significant differences in age, gender, race, ethnicity, educational level, employment status, or legal claims relating to low back pain between patients treated by DOs or MDs.

Patients treated by DOs reported significantly lesser use of both NSAID and opioids than patients treated by MDs (Table 1).

Table 1. Medication use among patients with chronic low back pain according to type of treating physician.

	Patients treated by DOs (n=100)	Patients treated by MDs (n=245)	Odds ratio; 95% CI	p value
NSAID use	57 (57.0%)	168 (68.8%)	0.61 (0.38-0.98)	0.04
Opioid use	25 (25.0%)	91 (37.1%)	0.56 (0.33-0.95)	0.03

Patients treated by DOs reported significantly lower scores on the Pain Catastrophizing Scale than patients treated by MDs, indicating lower levels of catastrophic thinking related to pain (Table 2). Correspondingly, patients treated by DOs also reported significantly higher scores on the Pain Self-Efficacy Questionnaire, indicating higher levels of coping and resilience related to pain.

Table 2. Psychosocial factors among patients with chronic low back pain according to type of treating physician.

	Patients treated by DOs (n=100)	Patients treated by MDs (n=245)	p value
Pain Catastrophizing Scale score			
Median	8	16	0.001
IQR	4-22	8-29	
Pain Self-Efficacy Questionnaire score			
Median	40	35	0.049
IQR	27-50	23-45	

[CLICK here for additional info on PCS and PSEQ measures.](#)

CONCLUSION

This study found that DOs were significantly less likely than MDs to prescribe NSAIDs or opioids for their patients with chronic low back pain, and suggests that DOs more closely adhere to current clinical practice guidelines for treatment of chronic pain [4], including low back pain [5].

These findings may also reflect principles of osteopathic philosophy, such as self-regulation and self-healing, which enable DOs to more often use non-pharmacological treatments such as osteopathic manipulative treatment to address structure and function before considering pharmacological treatments.

Patients treated by DOs also reported lower levels of pain catastrophizing and greater pain-self efficacy, suggesting that osteopathic philosophy and practice are closely aligned with the biopsychosocial model of pain that considers not only local pathology in developing a treatment plan, but that also addresses psychological and social aspects of the patient's overall experience and environment to help optimize medical care.

Additional research is being conducted by us to determine if better pain and functioning outcomes are reported over six months of follow-up by patients treated by DOs as compared with patients treated by MDs and, if so, to identify factors associated with osteopathic medical care that may be related to such better outcomes.

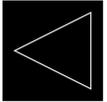
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Pain Catastrophizing Scale and Pain Self-Efficacy Questionnaire

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Pain Catastrophizing Scale [2]

Scoring: not at all, 0; to a slight degree, 1; to a moderate degree, 2; to a great degree, 3; all the time, 4.

When I'm in pain...

1. ___ I worry all the time about whether the pain will end
2. ___ I feel like I can't go on
3. ___ It's terrible and I think it's never going to get any better
4. ___ It's awful and I feel that it overwhelms me.
5. ___ I feel I can't stand it anymore
6. ___ I become afraid that the pain will get worse
7. ___ I keep thinking of other painful events
8. ___ I anxiously want the pain to go away
9. ___ I can't seem to keep it out of my mind
10. ___ I keep thinking about how much it hurts
11. ___ I keep thinking about how badly I want the pain to stop
12. ___ There's nothing I can do to reduce the intensity of this pain
13. ___ I wonder whether something serious may happen

Catastrophizing is described as an “exaggerated negative mental set brought to bear during actual or anticipated painful experience.” [2]

The Pain Catastrophizing Scale (PCS) is used as a measure of catastrophic thinking related to pain, and looks at three dimensions of catastrophizing:

- **Rumination**
- **Magnification**
- **Helplessness**

Rumination: includes items 8, 9, 10, 11

Magnification: includes items 6, 7, 13

Helplessness: includes items 1, 2, 3, 4, 5, 12

Each item is scored from 0-4.

Total score is computed by summing all 13 items with a possible score from 0-52.

Pain Self-Efficacy Questionnaire [3]

1. ___ I can enjoy things, despite the pain
2. ___ I can do most of the household chores (i.e. tidying up, washing dishes etc) despite the pain
3. ___ I can socialize with my friends or family members as often as I used to do, despite the pain
4. ___ I can cope with my pain in most situations
5. ___ I can do some form of work, despite the pain (i.e. housework, pain and unpaid work)
6. ___ I can still do many of the things I enjoy doing, such as hobbies or leisure activity, despite pain
7. ___ I can cope with my pain without medications
8. ___ I can still accomplish most of my goals in life, despite the pain
9. ___ I can live a normal lifestyle, despite the pain
10. ___ I can gradually become more active, despite the pain

The Pain Self Efficacy Questionnaire assesses the confidence of patients with ongoing pain in their ability to perform activities while in pain.

Each item is scored on a scale of 0-6 with 0 being no confidence in performing the activity and 6 being complete confidence to perform the activity.

Total score is computed by summing all 10 items with a possible score from 0-60.

Higher scores reflect higher self-efficacy beliefs and are associated with clinically significant functional levels.