



# Multimodal Therapy Combining Spinal Manipulation, Transcutaneous Electrical Nerve Stimulation, and Heat for Primary Dysmenorrhea: A Prospective Case Study

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### ABSTRACT

**Objective:** The purpose of this case study was to report the effects of multimodal therapy as an adjunct to oral contraceptives on pain and menstrual symptoms in a patient with primary dysmenorrhea.

**Clinical Features:** A 27-year old nulligravid and nulliparous woman presented with low back pain, thigh pain, and menstrual symptoms associated with primary dysmenorrhea. Multimodal therapies (spinal manipulation, clinic-based transcutaneous electrical nerve stimulation, and heat applied at home) were delivered over 3 menstrual cycles. Outcome measures included pain (visual analogue scale) and menstrual symptoms (Menstrual Distress Questionnaire) from baseline to follow-up. She continued to take her oral contraceptives throughout the study period.

**Intervention and Outcome:** For both low back and thigh pain, the patient reported clinically important differences in average pain and worst pain after 2 and 3 months from baseline. There were no clinically important differences in current pain, best pain, or menstrual symptoms at follow-up. No adverse events were reported.

**Conclusion:** Some of this patient's dysmenorrhea symptoms responded favorably to multimodal therapy over 5 months. The authors observed important short-term reductions in low back and thigh pain (average and worst pain intensity) during care. (*J Chiropr Med* 2018;17:190-197)

**Key Indexing Terms:** *Dysmenorrhea; Manipulation, Spinal; Manipulation, Chiropractic; Transcutaneous Electric Nerve Stimulation; Combined Modality Therapy*

### INTRODUCTION

Primary dysmenorrhea is defined as painful menstruation in the absence of underlying pelvic pathology.<sup>1</sup> Primary dysmenorrhea is a common uterine condition that affects nearly half of reproductive age girls and women.<sup>2</sup> Previous studies reported a prevalence of primary dysmenorrhea in approximately 45% to 93% of women.<sup>3-6</sup> About 7% to 15% of women reported severe menstrual pain that limited work or daily activities<sup>3,7,8</sup> or resulted in economic loss.<sup>9,10</sup>

The etiology of primary dysmenorrhea is not well understood. Evidence suggests that it involves increased endometrial prostaglandin production, basal pressure, and uterine contractions, leading to higher blood flow impedance, uterine vasoconstriction, and subsequent pain.<sup>11-13</sup> Traditionally, treatments have focused on managing these physiological responses, including nonsteroidal anti-inflammatory drugs and oral contraceptive pills.<sup>14,15</sup> Nonsteroidal anti-inflammatory drugs and oral contraceptive pills reportedly provide substantial benefits to approximately 75% of women with primary dysmenorrhea.<sup>3,9,10,16-18</sup> However, for women wishing contraception, combined oral contraceptives (specifically those combining ethinyl estradiol and chlormadinone) are preferred, thus eliminating the inherent risks associated with use of nonsteroidal anti-inflammatory drugs.<sup>13</sup>

Approximately 20% of women with primary dysmenorrhea do not receive adequate symptom relief from these pharmacologic treatments.<sup>19</sup> Consequently, some women seek nonpharmacologic treatments for the management of their menstrual symptoms.<sup>19-23</sup> Nonpharmacologic interventions commonly used by women include acupuncture,

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spinal manipulation, transcutaneous electrical nerve stimulation (TENS), and heat application.<sup>20,24-28</sup> In Australia, approximately 8% to 21% of women with cyclic perimenstrual pain and discomfort often received complementary and alternative medicine from chiropractors or other complementary and alternative medicine providers.<sup>22</sup> Moreover, a qualitative study reported that some women experience dissatisfaction with painkillers and oral contraceptives for the management of dysmenorrhea.<sup>29</sup> Despite the common use of nonpharmacologic interventions, there is limited evidence of their effectiveness.<sup>20,24-28</sup>

Most studies examined interventions independently of one another or examined the therapy as an alternative to pharmacologic treatments. Such interventions include spinal manipulation,<sup>26,30-32</sup> TENS,<sup>28</sup> and topical heat.<sup>27,33,34</sup> Pragmatically, women with primary dysmenorrhea may try a number of therapies concurrently to improve pain and function. Thus, studies examining the effects of multimodal therapies may be more representative of the treatments provided in clinical practice. To the best of the authors' knowledge, no high-quality studies have examined the effectiveness of combined nonpharmacologic therapies in a program of care for the management of women with primary dysmenorrhea.

The purpose of this prospective case study aimed to examine the effects of chiropractic care using multimodal therapy (ie, spinal manipulation, TENS, and heat) as an adjunct to oral contraceptives on pain and menstrual symptoms in a woman with primary dysmenorrhea.

## CASE REPORT

The authors conducted a prospective case study in a woman with primary dysmenorrhea by administering multimodal therapy over 3 menstrual cycles. The research ethics board at the Canadian Memorial Chiropractic College, Toronto, Canada approved this study (REB #1103CR3). Written informed consent from the participant and the licence to use the Menstrual Distress Questionnaire (MDQ) were obtained before conducting the study.

### Description of Participant

A 27-year old nulligravid and nulliparous female doctor of chiropractic (M.L.) presented with a chief complaint of low back and bilateral thigh pain during her menstrual period. The pain began several months after menarche at age 12 and worsened as she reached 16 years of age. At 16 years of age, her family doctor prescribed oral contraceptive pills (drospirenone 3 mg, ethinyl estradiol 0.03 mg; in tablet form), which reduced the pain. Since the age of 16, her menstrual pain consistently began 2 days prior to menstruation and resolved approximately 5 days after the start of menstruation, with similar character and intensity of pain over the years. She described her pain as a dull ache surrounding the lumbar spine that referred bilaterally to the

anterolateral thighs. Specifically, the pain was located through the entire lumbar spine bilaterally as diffuse widespread discomfort, accompanied by achy pelvic referral pain down the anterolateral thigh. On the second day of menstruation, the pain extended to the superolateral knee and lateral malleolus. The intensity of back and leg pain peaked on day 1 of menstruation and was rated as 45 mm and 15 mm out of 100 mm, respectively. The low back and thigh pain were associated with menstrual headaches starting 2 days before menstruation and lasting approximately 3 days (the menstrual headaches did not occur with ovulation). She did not experience this pain outside of the menstrual cycle. She reported that her menstrual-related pain was severe enough, at times, to miss school, but when she was older, she did not miss work because of the pain. If severe, the pain would awaken her from sleep.

Criteria for primary dysmenorrhea includes the following: (1) confirmation of no pelvic organ pathologies on physical examination, (2) history of primary dysmenorrhea that began within 2 years of menarche, (3) menstrual pain beginning the day before or just after onset of menstrual flow, and (4) regular menstrual cycles (within  $\pm 3$  days).<sup>1,9,35,36</sup> Meeting the classic criteria, her family physician diagnosed her with primary dysmenorrhea at the age of 16. Aside from primary dysmenorrhea, she was in good health. Her annual examinations with her family physician, which included internal pelvic examinations and pap tests, were unremarkable. With no other symptoms or conditions reported (eg, no infections, no intrauterine device used), her family physician found no indications to order imaging or other medical procedures or to refer to a gynecologist. The patient reported a family history of breast cancer on her maternal side. The patient was a nonsmoker, nondrinker, and reported exercising 5 days per week. She had not tried any other treatments for the primary dysmenorrhea. Her family doctor prescribed naproxen for her pain, but the patient preferred to not take any pharmacologic treatment for pain management.

Physical examination was conducted during menses. The examination revealed a height of 157.5 cm and weight of 58 kg (body mass index 23.8) with normal vital signs. Observation revealed mild anterior head carriage but normal thoracic and lumbar curves and a level pelvis. Active and passive lumbar spine motion was full and pain free, except for mild pain on passive extension and bilateral extension, with rotation localized to L4-L5. Hip screen was conducted because the patient report of thigh and leg pain and was unremarkable. Thoracic spine screen revealed mild tenderness on extension in the midthoracic region. Palpation revealed mild tenderness of the erector spinae, quadratus lumborum, quadriceps, and psoas bilaterally, and painful joint restrictions at L4, L5, and sacroiliac joints, bilaterally. Her low back pain was reproduced with orthopedic tests at the sacroiliac joints, bilaterally: Gaenslen, posterior-anterior compression of sacroiliac joints, and Yeoman's. Neurologic examination of the upper and lower extremities was unremarkable.

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