

Transcutaneous Electrical Nerve Stimulation and Mindfulness-Based Stress Reduction for Primary Care Patients with Chronic Pain

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BACKGROUND

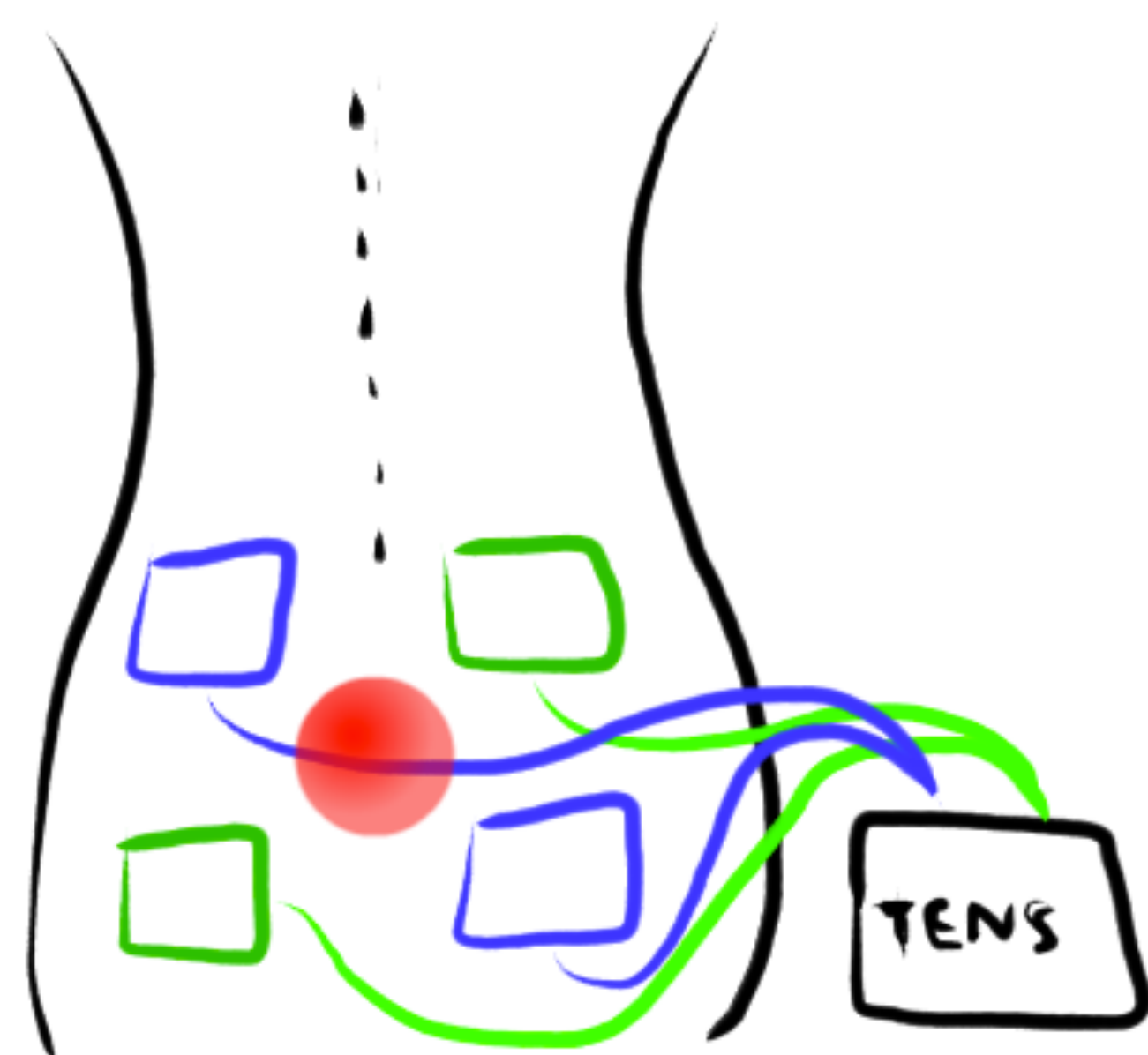
In response to 2016 CDC guidelines from Dowell, Haegerich and Chou that suggest non-pharmacologic and non-opioid pharmacologic interventions as a preferred treatment for chronic, non-cancer pain, providers at UW Health Fitchburg Family Medicine Clinic (UWFFM) came together to examine their opioid prescribing practices. Facilitated by the Wisconsin Research Education Network, these meetings revealed that during the three-month period from November 2017 to February 2018, UWFFM providers had 36 patients on a morphine equivalent daily dose of 30 mg or more (J. Lawler personal communication, April 2, 2018). Only four of those patients had a cancer diagnosis (J. Lawler personal communication, April 2, 2018).

Providers expressed a desire to decrease opioids use among their patients through effective alternative and complementary therapies, which at that time were recommended inconsistently. They voiced frustration and stress surrounding chronic pain office visits, a lack of education surrounding evidence-based complementary and alternative therapies, and difficulty getting patients to buy in to alternative and complementary therapies when an alternative intervention is often more costly than opioids.

A "healing box" containing evidence-based, non-pharmacologic interventions for in-clinic demonstration was conceptualized to offer alternatives to opioids for patients with chronic pain. The concept was adopted as the author's Doctorate of Nursing Practice Scholarly Project. A literature review subsequently identified mindfulness-based stress reduction (MBSR) and transcutaneous electrical nerve stimulation (TENS) as both efficacious and feasible components of the healing box.

OBJECTIVES

- Increase knowledge of TENS and MBSR as therapies for chronic pain
- Decrease provider frustration and stress with patients with chronic pain
- Decrease the likelihood of providers prescribing opioids for chronic pain



METHODS

A pre-implementation survey included validated questions adapted with author permission from the "Pain Medication in Primary Care" questionnaire. This questionnaire was developed for the Royal National Hospital in England by Shoenfeld et al. (2017) to assess providers' current practices, feelings, and beliefs about the treatment of chronic pain. The survey also included questions regarding the providers' beliefs of efficacy, confidence in teaching, and comfort recommending TENS and MBSR to patients with face and content validity reviewed by the project mentor and project supervisor.

During implementation, providers were to be taught a one minute "elevator speech" on TENS and MBSR to give to non-pregnant adult patients with chronic pain. Two "healing boxes" containing a TENS unit for demonstration and trial in-clinic, a TENS handout for patients, and an MBSR handout including local MBSR resources were to be available in clinic.

On the day of pre-implementation teaching, UWFFM was unexpectedly closed due to COVID-19 and all subsequent chronic pain visits were changed to video visits. Therefore, the pre-implementation survey was taken in May 2020 by four providers, while the "elevator speech" for providers and TENS demonstration were conducted in pre-recorded videos by the author. TENS unit trials by patients in-clinic were no longer feasible.

During the two-week implementation period, when providers identified an eligible chronic pain patient, they sent an Epic dotphrase containing handouts on MBSR and TENS and the link for the TENS demonstration video to the patient's electronic health record. The providers kept track of how many patients were provided with this material.

In June 2020, after the two-week implementation period, UWFFM providers again completed the survey. Survey data analysis was conducted in August 2020.

It is intended that after COVID restrictions are lifted, TENS units purchased will still be given to UWFFM for demonstration and trial purposes.

RESULTS

Three family medicine doctors and one nurse practitioner completed the pre and post survey. Only the NP had any specialty training in chronic pain or pain management. The providers were asked what percent of patients in their practice suffer from chronic pain and the replies ranged from 10 to 33 percent. The providers responded that they prescribe opioids for five to 25 percent of these chronic pain patients. During the two-week implementation period, providers sent materials on TENS and MBSR to 22 patients.

A paired sample t-test was conducted to compare survey results before and after implementation. There was no paired t-test that produced statistically significant ($p < .05$) results. It is possible that the significance of these findings was affected by the small sample size available to this project.

A Pearson correlation coefficient was then calculated to explore the degree to which the intervention affected providers' responses to the survey. Although none of the results were statistically significant, several questions from the survey demonstrated some effect. The table below illustrates questions which showed medium (.3 to .5 or -.03 to -.05) or large (.5 to 1.0 or -.05 to 1.0) associations.

With money left over from the project budget, one TENS unit was purchased for a patient that would otherwise have been unable to afford it.

Survey Questions with Medium and Large Effect

Survey Question	Correlation Coefficient, r	Significance, p
What percentage of your patients with chronic pain do you maintain on long term opioids for their pain?	-.318	.682
Please tell us how often you prescribe each of the following medications to chronic pain patients: strong opioids	-.333	.677
Please tell us how often you prescribe each of the following medications to chronic pain patients: tricyclic antidepressants	-.333	.677
Please tell us how often you prescribe each of the following medications to chronic pain patients: anxiolytics	-.455	.545
I see no options but to prescribe opioid analgesics for some patients.	-.333	.667
I believe transcutaneous electrical nerve stimulation (TENS) is a useful tool for managing chronic pain.	.905	.095
I feel comfortable recommending TENS units to my patients with chronic pain.	.688	.312



CONCLUSIONS AND RECOMMENDATIONS

With 22 uses over a two-week period, this project demonstrates a demand for TENS and MBSR resources in primary care. Although providers did not report stress and frustration reduction, results suggest increased knowledge of and confidence in using TENS, an evidenced-based treatment for chronic pain. In addition, these resources may have had a modest impact on prescribing practices. This approach should be investigated further for its potential to combat the current opioid crisis and align practices with CDC recommendations and Joint Commission requirements for alternative interventions for pain. Since these results were likely affected by small sample size and kurtosis, repeating this study with a larger sample size and longer implementation period would be helpful to confirm these findings.

As noted above, the original goal of allowing patients to test a TENS unit in-clinic was not able to be completed due to the COVID-19 pandemic. When providers return to conducting in-person visits for chronic pain, it would be beneficial to implement the original study design with in-clinic TENS unit instruction. As COVID-19 has precipitated a move to virtual and electronic health care, however, the electronic resources developed for the revised project should be used in conjunction with in-person TENS unit instruction.

REFERENCES

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