

Project: Pain Coping Skills Training (PCST) Workshops for Advanced Practice Nurses

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Abstract

Purpose: This is a demonstration project to assess the feasibility, trainee satisfaction, and clinical implementation of Pain Coping Skills Training (PCST) workshops (2.5 day) for advanced practice nurses.

Purpose: Millions of Americans suffer from persistent chronic pain despite medical intervention. It is estimated that 2-40% of U.S. adults have chronic pain, with a median of 15% (i.e. >34M). Recent projections indicate the growing gap between the need for medical services and availability of health providers, especially in primary care. One proposed solution is to increase service delivery by Advanced Practice Registered Nurses (APRNs) for management of chronic illness. The history and philosophical core of the profession of nursing prioritizes patient education and self-management. This proposal is designed to leverage both the nursing profession's expertise in patient education and their increased care of patients with chronic pain by training APRNs in Pain Coping Skills Training (PCST). PCST is an efficacious, brief intervention, based on cognitive-behavioral principals for managing chronic pain. We recently completed the first randomized, controlled clinical trial that demonstrated the effectiveness of APRNs providing PCST to patients with chronic pain. This has set the stage for dramatically increasing patient access to PCST to improve clinical outcomes. We propose to create a national training/certificate program in PCST for APRNs and to evaluate the effectiveness of this training in community practice. Outcomes will include APRN increase in knowledge in PCST principles, confidence, and competence in delivery. Subsequent APRN delivery of PCST to patients in their practices will be assessed on a weekly basis along with patient characteristics that factor into the clinical decision to deliver PCST to those patients. Patient outcomes will be assessed pre- and post-receipt of PCST treatment.

Scope – Key Objectives (per application):

- 1:** Parlay recent evidence that APRNs can improve outcomes of patients with chronic pain by introducing PCST during clinical encounters. APRNs working in primary care and pain centers in the United States will receive training in how to provide PCST.
- 2:** Quantitatively evaluate the effectiveness of APRN training on (1) knowledge of PCST skills, (2) confidence to deliver the skills, (3) competence in delivering the skills, (4) clinical decision making re: delivery of skills to their patients.
- 3.** Quantitatively determine the effectiveness of PCST training of APRNs for the (1) reduction of symptom burden, (2) improvement in global health, and (3) satisfaction with medical care for patients with chronic pain.
- 4:** Demonstrate the feasibility and utility of clinical assessment of patient reported outcomes (PROs) in community practice using the NIH PROMIS measures (<http://www.nihpromis.org>) through the NIH Assessment Center (www.assessmentcenter.net).
- 5:** Demonstrate the feasibility and utility of innovative educational technologies to deliver a blended approach to training in pain management and to enhance patient learning.
- 6:** Use the success of this project as the foundation for broadly disseminating training opportunities through establishing a PCST train-the-trainer program at Stony Brook's School of Nursing along with an ongoing certificate program.

Methods: Advanced Practice Nurses were informed of PCST workshop opportunities in national advertising and professional association announcements. Two 2.5-day workshops were conducted in 2015 and 2016 at Stony Brook University, School of Nursing. Outcome measures included pre-post workshop knowledge assessments, competence assessments of delivery of PCST in the Stony Brook Clinical Skills Center with simulated actors, satisfaction ratings re: workshop, weekly reports of implementation of PCST with their patients in the 12 weeks following training, and qualitative interviews with a subset of trainees after 12 weeks of implementation.

Results: Thirty-eight nurses were trained in the two workshops. Ratings of satisfaction with the training were very high (across items mean = 4.8 where 5.0 is best rating). Satisfactory competence

(i.e., a score ≥ 50) in PCST implementation with a simulated patient immediately following training was observed in 92% of trainees, and 58% achieved high competence (i.e., a score ≥ 70). Across the 12 weeks following training, nurses reported using PCST in clinic encounters with 509 patients. Qualitative interviews at 3-months post workshop suggested feasibility and value in use of PCST with patients suffering with chronic pain. Further efforts at dissemination are warranted.

Key Words: pain management, cognitive behavioral therapy, advanced practice nursing, dissemination

Outcome Measures and Results

Analysis strategy

Response rates, training completion rates, ratings of satisfaction with the training, and reasons for PCST implementation were analyzed descriptively by examining frequencies and means.

For post-training competence outcomes, we tested whether the proportion of nurses achieving at least “satisfactory” competence (a score ≥ 50) exceeded at least a rate of 75% in the sample. A one-sample binomial test comparing the observed proportion against a null-proportion of 0.75 was used for this purpose.

Changes in nurses’ knowledge about pain coping skills from pre- to post-training were examined with paired-samples t-tests. Changes in nurses’ confidence ratings over the course of the study protocol (pre-training, after presentation, after role playing, and after use in clinical practice) were examined using repeated measures ANOVA; planned contrasts comparing the mean confidence level at each time point with the mean at the subsequent time point were used to evaluate the significance of successive changes in the confidence ratings. Standardized effect sizes (computed as mean changes relative to the standard deviation of scores at baseline) were examined to quantify the magnitude of changes in knowledge and confidence scores.

Response and completion rates

Rates of response to national announcements of the free training workshops were tabulated as an objective indicator of APRN interest. Rate of full completion of training by nurses to certification were also tabulated.

| Table 1. Response and completion rates | October 2015 | May 2016 | Total # of Inquiries |
|--|-------------------------|---------------------|---------------------------------|
| Rates of response to PCST workshop announcements | 60 | 87 | 147 |
| Rate of full completion of training by nurses to certification | 16 | 22 | 38 |

The rates of response to advertising are indicative of nursing interest in learning these interventions.

These two trainings very closely met our goal of training 40 nurses. We were pleased with the geographic diversity among those who attended: New York, $n=30$, Pennsylvania $n=1$, Kansas $n=2$,

Idaho $n=1$, Massachusetts $n=1$, South Carolina $n=1$, New Jersey $n=1$, and Connecticut $n=1$. For those attending the workshops, the average number of years in practice as an APRN was 5.68 (range= 1 to 12+ years).

Satisfaction with training

At the end of the training workshops, nurses completed a workshop evaluation (aspects of the training, including content and usefulness of workshop, materials) on a 5-point scale. Ratings of the workshop were consistently positive (mean across items = 4.8 where 5 is the highest rating).

Table 2. Pain Coping Skills Workshop Evaluation

positive

Questions 1-7: 1=strongly disagree; 5 strongly agree
Questions 8-15: 1=poor; 5=excellent)

| Survey Instrument Items | Mean | St. Dev |
|---|------|---------|
| 1. I was informed of the workshop objectives. | 4.90 | 0.30 |
| 2. The content was useful and relevant. | 4.90 | 0.30 |
| 3. The pace of the workshop was appropriate. | 4.78 | 0.42 |
| 4. Material was presented in an organized manner. | 4.83 | 0.45 |
| 5. I will be able to use what I learned. | 4.73 | 0.60 |
| 6. The workshop met my expectations. | 4.90 | 0.38 |
| 7. Will the information received today affect a change in practice? | 4.68 | 0.57 |
| 7. Visuals | 4.63 | 0.59 |
| 8. Acoustics | 4.63 | 0.67 |
| 9. Meeting space | 4.60 | 0.67 |
| 10. Materials | 4.58 | 0.78 |
| 11. Overall program | 4.83 | 0.38 |
| 12. Dr. Patricia Bruckenthal | 4.92 | 0.36 |
| 13. Dr. Christine Stamatatos | 4.89 | 0.39 |
| 14. Stacey Tursi, RN-C, ANP-BC | 4.86 | 0.54 |

Change in Knowledge of PCST theory and practice

Nurse knowledge of theory and practice in four of the pain coping skills, gate control theory, motivational interviewing, and brief action planning were assessed with a questionnaire administered before and after the 2 ½ day PCST workshops. Results indicate significant changes in knowledge of theory and practice after the training. For the October 2015 training, there was a significant change in knowledge scores from pre ($M = 8.18$, $SD = 0.95$) to post ($M = 9.24$, $SD = 0.83$) training, $t(16) = -4.01$, $p < 0.01$. Results from the May 2016 training likewise demonstrate that there was a significant change in scores from pre ($M = 6.55$, $SD = 1.47$) to post ($M = 7.95$, $SD = 1.43$) training, $t(21) = -3.93$,

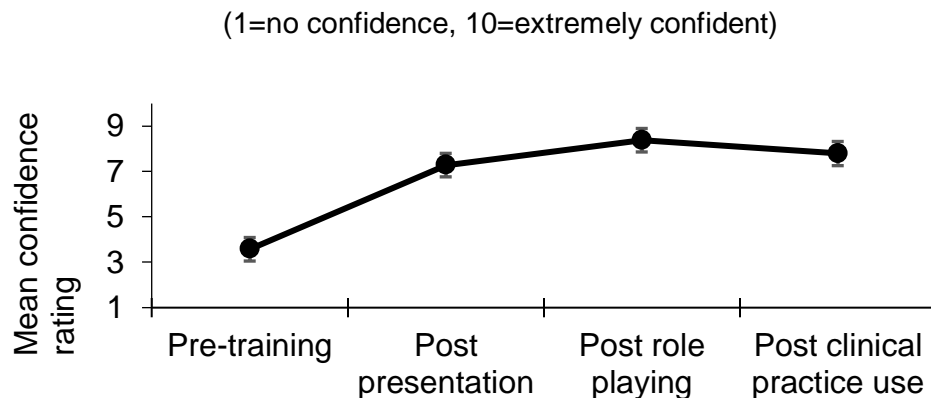
$p < 0.01$. Nurses from the May 2016 training were asked a different set of questions from the October 2015 training group, as results from the October training made it clear that questions were too easy.

Self-reported confidence in ability to implement PCST

Nurses' levels of confidence in their ability to implement PCST effectively in clinical practice were assessed with five self-report items (1 to 10 scale, no confidence – extremely confident) tapping each of the pain coping skills that nurses were taught. Confidence ratings were assessed at pre-training (baseline), after trainer didactic presentation and modeling, after role playing, and after using in clinical practice. Ratings for the five items were averaged into an overall confidence score at each of the four time-points (Cronbach's alphas ranging from .87 to .92 across assessment time-points).

Nurses' confidence in their ability to implement PCST differed significantly across assessment time points, $F(3,146) = 67.11$, $p < .001$ (see Figure 1).

Figure 1: Mean (standard error) confidence rating at each assessment time point



Specifically, confidence ratings increased significantly from baseline (pre-training) to post-training presentations and modeling ($t(146) = 9.93$, $p < .001$) with a large effect size (Cohen's $d = 1.78$).

Confidence ratings further increased from post didactic sessions to post role-playing during training ($t(146) = 2.93$, $p < .01$, $d = .53$). The nurses maintained their confidence across the 12 weeks of PCST implementation following training. These results indicate the impact of each aspect of training (didactic training and the role-plays) on the nurses' confidence to implement PCST.

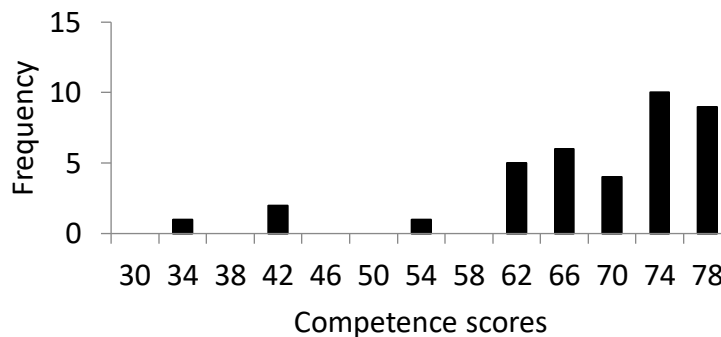
Observer rated competence in PCST delivery

At the end of the workshop, the ability of the nurses to competently deliver the PCST treatment to patients was evaluated in the Clinical Skills Center at Stony Brook University Medical Center.

Nurses interacted with standardized patients who were trained specifically for this protocol to deliver one of the PCST skills, activity-rest cycle, to the patient. At the conclusion, a series of 19 ratings (5-point scale; 1=poor, 5=excellent) were completed by the standardized patient to assess competence of delivery (possible total score range 19-95; Cronbach's alpha = .95). "Satisfactory" competence was *a priori* set at scores ≥ 50 , lower competence at scores <50 , and high competence at scores ≥ 70 .

The distribution of observer competence ratings across nurses is shown in Figure 2. Out of the 38 nurses, 35 (92%) achieved at least "satisfactory" competence (i.e., a score ≥ 50), and 22 (58%) achieved high competence (i.e., a score >70). The rate of nurses achieving at least satisfactory competence significantly exceeded the target rate of 75%, $z = 2.44$, $p = .01$.

Figure 2: Distribution of nurse competence scores with simulated patients



Satisfaction with training following 12 weeks of PCST implementation in clinic

At the end of the 12-week follow-up period, the nurses once again completed an evaluation of the training. We were interested in determining their perception of the value of the training when implementing PCST in their clinical practice. Table 3 summarizes these data and demonstrates that enthusiasm for PCST continued as nurses implemented it with their patients. Challenges noted were the time limitations in the clinical encounter that constrain patient training in PCST.

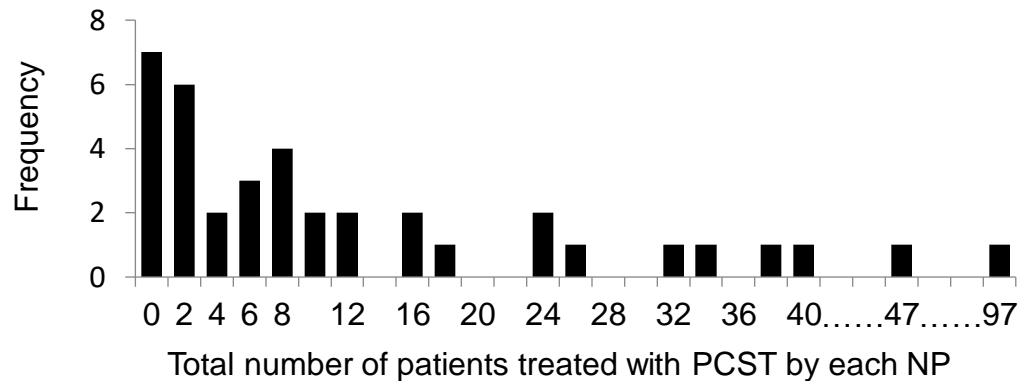
Table 3. Nurse Practitioner Post-Training Questionnaire: Satisfaction with training

(1=strongly disagree; 10=strongly agree)

| Survey Instrument Items | October Mean | October St. Dev | May Mean | May St. Dev |
|--|--------------|-----------------|-------------|-------------|
| 1. How valuable do you find Pain Coping Skills to be as a part of your patient treatment plan? | 9.18 | 1.38 | 9.32 | .99 |
| 2. How confident do you feel about delivering Pain Coping Skills to your patients? | 8.06 | 1.71 | 8.23 | 1.48 |
| 3. How easy is it to incorporate Pain Coping Skills into a routine office visit? | 6.83 | 1.20 | 7.68 | 2.15 |
| 4. How likely are you to continue to use Pain Coping Skills in your practice? | 7.94 | 1.95 | 8.64 | 1.97 |
| 5. How valuable do you find Brief Action Planning as part of your patient treatment plan? | 8.59 | 1.42 | 8.68 | 1.46 |
| 6. How confident are you in engaging in Brief Action Planning with your patients? | 8.18 | 1.47 | 8.05 | 1.53 |
| 7. How easy is Brief Action Planning to incorporate into a routine office visit? | 7.59 | 1.87 | 7.95 | 1.65 |
| 8. How likely are you to continue to use Brief Action Planning in your practice? | 8.18 | 1.70 | 8.42 | 1.68 |

Frequency of PCST implementation in clinic

The actual implementation of PCST in clinical practice was assessed on a weekly basis for 12 weeks following the nurses' training. Each week, nurses were asked to record the number of office visits that included delivery of a PCST orientation or coping skill to a patient. Nurses treated an average of 13.4 ($SD = 18.9$; Median = 7.0) patients with PCST over the 12-week periods for a total of 509 patients. The average number of patients treated per week did not significantly change over time (Wald $\chi^2(11) = 14.6$, $p = .20$). However, there was wide variation in the use of PCST among nurses: 18.4% (7 out of 38) of the nurses did not implement PCST with any patient over the 12 weeks, whereas 15.8% (6 out of 38) used PCST with 30 patients or more (max=97, see Figure 3).

Figure 3: Distribution of the number of patients treated with PCST over 12 weeks

Weekly nurse reports of rationale for using PCST with their patients

Nurses also were asked each week to indicate the clinical considerations for implementing PCST with their patients as a treatment option using a multiple selection list ('check all that apply').

Across nurses and patients, the most frequently selected reasons were:

- 64%: "patient has inadequate pain coping skills"
- 53%: "patient interest in non-pharmacological interventions"
- 51%: "severity of pain"
- 49%: "degree of functional disability"
- 47%: "insufficient response to medications"
- 10%: "analgesic medications are contraindicated for this patient"

Qualitative Interviews of subset of trained nurses following 12-week follow-up

Finally, a random subset of 12 nurses from the 2 workshops participated in qualitative phone interviews after completing the 12 weekly reports to provide more in-depth reflections on their experiences. Feedback included:

- *"The training program was great. I wish we did more of the one on one. Working with the patient in the end (SIM lab) was great and a real eye opener and you realize how much you're doing and how you're suggesting and doing as opposed to having the patient come up with ideas. You realize how much different it is from what we normally do."*
- *"SIM lab was great! It gave you an opportunity to try something out that was new and was in a different setting and this is real in real time, but it was not a reality thing so you could screw up. It was also a time to find out how much I learned and what I might need more help in. That was an excellent thing to have."*
- *"When I was there, I felt that I was going "Wow, I'm so happy to be a nurse," and there was such an amazing comradery and intellect from those who were presenting and showing us*

their process and use of the skills. It was a great way to learn and I was just so happy to be a nurse learning the material. It really expanded upon my knowledge. It was a great way to show us how to use these skills, there's research for it, very gratifying. This took it to the next level. I like the integration of the intellect and addressing the emotional through the mind-body connect."

- *"Just the whole skills in itself. As a clinician, my background is orthopedics, and I went into it thinking I knew how to handle patients who are poor copers, but after going through this I think I may have been doing things wrong and coddling them too much. It taught me to empower the patient. It gave me a new dimension to care that I lacked before. "*
- *"I used the pleasant activity because I find that a lot of the people I deal with are stressed, overworked and overwhelmed and their lives are about everyone else and not them, so I use that to get them to take time for themselves, and it helps reduce stress and therefore pain. I used muscle relaxation techniques, a short, modified form. I used muscle relaxation because for people who are uptight, they have a lot of tension and pain, so teaching them to relax from head to toe in combination with the guided imagery is great."*
- *"I think especially in our current day and age where there is a big quest to get patients off of pain medications it's a great alternative to pharmacological treatment of pain. She was on some pretty heavy narcotics and after seven weeks she was on none and if that's not sufficient evidence then I don't know what is. And it positively impacted her quality of life and her family life."*
- *"They gave our patients hope, it gave our patients the ability to see themselves differently as functional human beings, they were able to enjoy life better and interact with their family. It changed the focus of how they viewed themselves. They were helping themselves, that was the best part."*

Other themes in the comments:

- Standard 15-minute office visit is very short for implementing these pain coping skills
- Health System administration does not always support these types of treatments
- Thinking about conducting patient group encounters to allow more time and greater number of patients reached
- Would like guidance on billing codes

Discussion

This dissemination project was designed to examine the feasibility, satisfaction with training, and actual implementation of PCST with patients after the workshops for nurse practitioners (NPs). Previously, we had run a randomized, controlled trial of PCST v. usual care for patients with painful osteoarthritis of the hip and/or knee. The trial was successful and led to this project to disseminate training in PCST. We conducted two trainings (2.5 days each) with a total of 38 NPs at Stony Brook University School of Nursing. As reported above, objective and subjective outcomes for the PCST workshops met the goals of (1) increasing knowledge in cognitive-behavioral principles that underlie

PCST, (2) increasing confidence and competence in delivering PCST to patients, (3) achieving high ratings of satisfaction with the training, and (4) reporting of high rates of subsequent implementation of PCST with the trainees' patients. Qualitative interviews of trainees indicated high levels of enthusiasm for the utility and effectiveness of PCST for patients with pain as well as other chronic disorders. The trained nurses noted their interest in receiving further training to deepen their expertise in this non-pharmaceutical intervention for chronic pain.

Further dissemination of PCST in Los Angeles, California

In 2014, Dr. Broderick moved from Stony Brook University in New York to the University of Southern California in Los Angeles where she identified healthcare systems that were working to address the opioid epidemic. Residual funds were available from this project and helped to support two training of PCST in 2016 and 2017 in Los Angeles. We partnered with the Los Angeles Department of Health and Rancho Los Amigos National Rehabilitation Center, one of the largest rehabilitation hospitals in the United States. In order to better accommodate the time constraints of busy clinicians, the PCST workshop was condensed into a 2-day format. Across the two workshops that were conducted, a total of 79 Los Angeles safety net providers took the PCST training, including physicians, physician assistants, nurses, social workers, occupational and physical therapists, psychologists, and rehab peer mentors. Follow-up surveys showed that more than 900 patients received PCST, motivational interviewing and/or brief action planning by these providers during health care visits in the 3 months following the training. In a majority of instances, PCST was used as part of patients' care plan to reduce/eliminate the use of prescribed opioids. As we observed following the trainings of NPs in NY, the Los Angeles health care providers noted that they found these non-pharmaceutical approaches very helpful for a variety of health targets, such as sleep disturbance, anxiety, weight loss, and increasing exercise.