Mindful Awareness in Body-oriented Therapy (MABT) for Chronic Pain: A Hybrid Mixed-Methods Implementation Science Pilot Study

Presented by

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- Funders:
  - University of WA School of Nursing RIFP
  - Massage Therapy Foundation

Important Related Background

- Evidence-based mind-body and other complementary and integrative health approaches are now considered best practice for non-pharmacological treatment of chronic pain.
  - U. S. Dept. of Health and Human Services. *Pain Management Best Practices Inter-Agency Task Force Report*; 2019.
  - Advancing Pain Research, I.; Care; Education. *Relieving Pain in America: A Blueprint for Transforming Prevention, Care*; Education, and Research, 2011.
- Under-utilized, non-pharmacological treatments are prescribed less than 30% of the time. We need to learn how to operationalize/support adherence to best practices for care of this population.
  - Morone, N.; Greco, C.; Moore, C.; Rollman, B.; Lane, B.; Morrow, L.; et al. A Mind-Body Program for Older Adults w Chronic Back Pain: A Randomized Trial. *JAMA Int. Med.* 2016, *176* (3).
  - Childs, J. Fritz, J.; Wu, S.; Flynn, T. et al. Implications of Early and Guideline Adherent Physical Therapy for Low Back Pain on Utilization and Costs. *BMC Health Serv. Res.* 2015, *15* (1).

Hybrid implementation one-group pilot study

- **Aim 1:** Explore uptake of MABT within the clinic
  - Primary research question: Does clinic stakeholder perception of MABT **acceptability**, **appropriateness**, **adoption**, **feasibility and sustainability** increase over the time of the project evidenced by positive responses to survey questions and increase in provider (and types of provider) referrals?
  - Secondary research question: **What are the key facilitators and barriers to MABT implementation**? Using focus groups with referring providers we will do an in-depth exploration of responses from surveys to better understand what underlies adoption and penetration.

Aim 2: Evaluate MABT effects on symptomatic distress within an adult chronic pain population.

- Hypotheses: Results will show significant improvement on
  - 1: physical and mental health measures of distress from baseline to post-treatment and at 3-month follow-up.
  - 2: interoceptive awareness, emotion regulation, and resilience from baseline to post-test and 3-month follow-up.

Setting: Osher Integrative Medicine Clinic at Vanderbilt University

Provides 17,000 appointments/year
-1700 of these are for massage
- Out of pocket expense

Nurse Practitioners (NPs) do all intakes/treatment planning and initial referrals

Providers include: NPs, Psychotherapists, Accupuncturists, Physical Therapists and Massage Therapists

Weekly *all* staff meeting – including admin, schedulers, clinicians, etc.

Weekly discipline-specific staff meetings

Mindful Awareness in Body-oriented Therapy (MABT)

- Teaches interoceptive awareness skills
- Includes touch, psychoeducation, mindfulness
- An 8-week program following manualized protocol

Explanatory Model:

MABT → Interoceptive Skills → Emotion Regulation → Improved Wellbeing

- Delivered individually
- Incremental in approach
- Evidenced-based
- Trauma-informed
- Involves home-based practice

Price, C. & Hooven, C. (2018) Interoceptive Awareness Skills for Emotion Regulation : Theory and Approach of Mindful Awareness in Body-oriented Therapy (MABT). *Frontiers in Psychology*

Implementation Procedures and Analysis

- **MABT Study Presentations:** 7 over 2 years of the study.
- **Staff Surveys** - 191 staff surveys completed over 7 timepoints (average of 27/timepoint), delivered after each staff meeting presentation.
  - Survey included 31 questions specific to MABT knowledge, implementation processes, perception of fit, infrastructure changes needed, receptivity, sustainability, referral facilitators, referral barriers.
- **Process Measures** (from electronic medical records)
  - # of referrals
  - Clinician type making referral
  - Result of referral (scheduled, declined, unable to contact)
  - Number of sessions completed by patient
- **Four Focus Groups (at end of study)**
  - Nurse Practitioners; Admin/Schedulers; Psychotherapists/Physical Therapists; Massage Therapists
- **Analysis**
  - Descriptive statistics
  - Content analysis to identify themes emerging in qualitative data

Acceptability Results

- **Survey highlights:**
  - Knowledge about MABT approach went from "I know a little but not much" by 47% on initial survey to 90% on final survey indicating "pretty knowledgeable" or "extremely knowledgeable."
  - 95% of all follow up survey respondents reported that implementation of MABT fit "very much" within the values/norms of the organization.

Appropriateness Results

- **Survey highlights:**
  - On initial survey, 53% indicated that MABT meets identified clinical needs of patients "very well", and 31% indicated "not sure/don't know." On follow up surveys 88% indicated "very well" and only 3% indicated "not sure/don't know."
  - On initial survey, 61% indicated that MABT fit into the values/norms of the organization "very much so" and 28% selected "not sure/don't know." In the following six follow up surveys, 95% selected "very much so."

- **Focus Group Highlights**: Overall agreement that MABT addresses a gap in services, particularly:
  - In addressing trauma, it is distinctly different than psychotherapy
    - *"a lot of people want to avoid or are not ready for psychotherapy; about 60 -70 percent of the folks we see fit this [characterization]."*
  - Individual sessions (vs group) for learning mindful body awareness skills
  - Individualized to the client's needs – the areas of their distress, and what will help them learn (can't do in a group)
  - Involves touch/somatic component in individualized session that is not present in psychotherapy.

Adoption Results

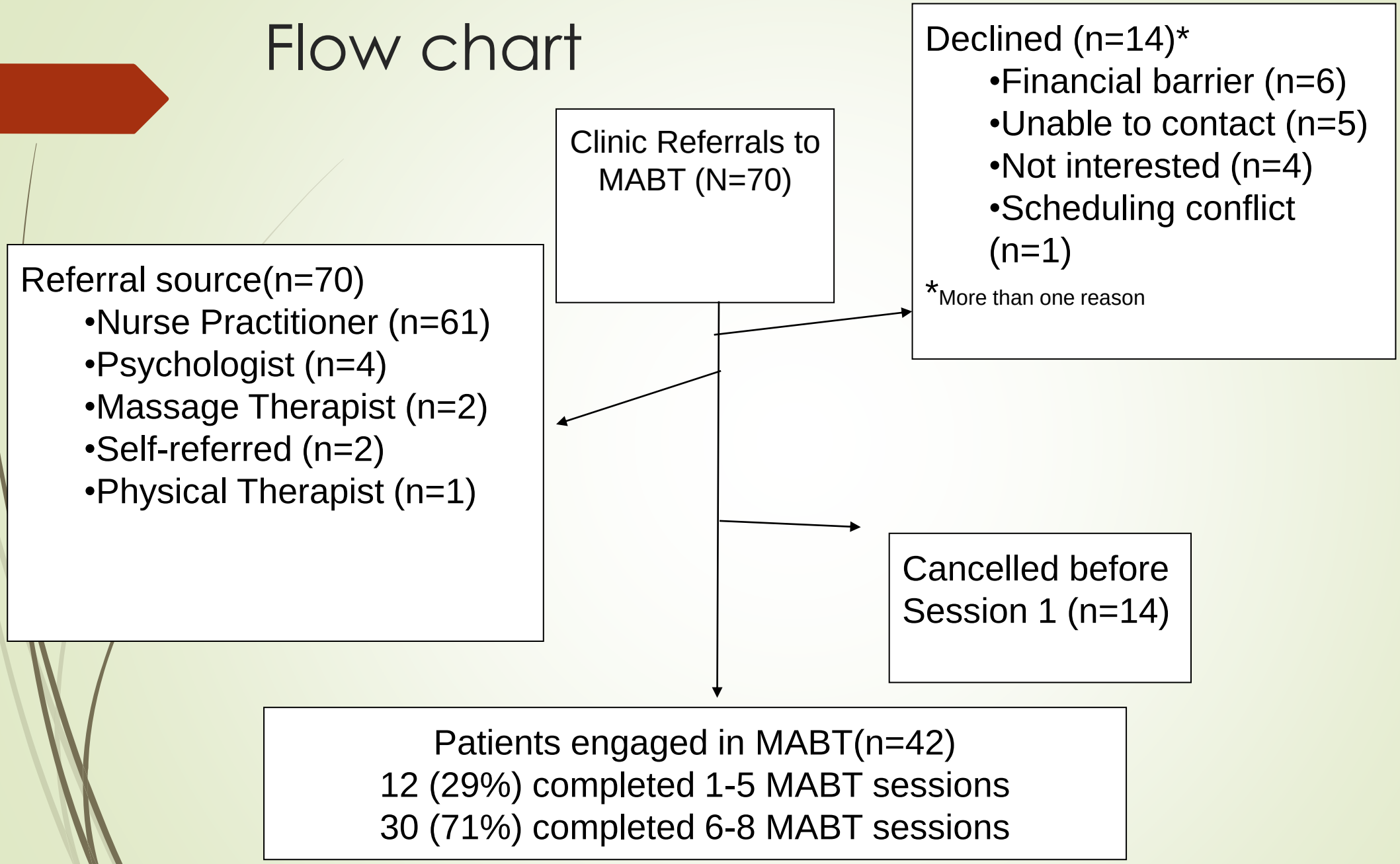
- **Survey highlights:**
  - 70 Referrals were made to MABT over 20 months of the project.
- **Focus Group Highlights:**
- Overall agreement that referrals were most appropriate for (vs. pain type) those who:
  - **Indicate interest in body awareness/mind-body connection**
  - **Are easily overwhelmed by somatic distress and has trouble regulating/managing pain**
  - **Have a lot of psychotherapy experience but haven't 'landed' in body to integrate what they know intellectually with what they experience somatically**
  - **Have difficulty assessing emotional awareness (e.g. significant trauma history)**

Feasibility Results

- **Survey highlighted that infrastructure changes were needed.**
  - Changes in scheduling infrastructure were made and at the mid-way point, 60% indicated scheduling was 'easier' and 24% said it had remained 'about the same.'

- **Focus Group Highlights:**
  - All NP indicated sending referral if patients expressed interested in MABT
  - Psychotherapists: a few times didn't send referral due to lack of female practitioners.
  - General agreement: insurance coverage availability would facilitate MABT referrals and increase patient demand:
    - possibly cross-training different types of providers so that more could offer MABT (psych/nurse, LMT).
  - General agreement: ability to describe the approach to patients is critical.
    - including explaining the relationship to nervous system regulation to address client's personal challenges/treatment goals.
    - Admin/scheduler quote: "*I understood how to explain interoceptive awareness but having the experience of receiving a session helped me think about how to describe it in the easiest way for patients so people from all educational levels could understand me. I could read about it but the demo session gave me an experiential understanding of it.*"
  - Admin: importance of scheduling all 8 sessions outright but better to let people know they can drop out than feel committed to attendance (i.e. pay as they go).

Flow chart


Clinic Referrals to MABT (N=70)
Declined (n=14)*
•Financial barrier (n=6)
•Unable to contact (n=5)
•Not interested (n=4)
•Scheduling conflict (n=1)
*More than one reason
Referral source(n=70)
•Nurse Practitioner (n=61)
•Psychologist (n=4)
•Massage Therapist (n=2)
•Self-referred (n=2)
•Physical Therapist (n=1)
Cancelled before Session 1 (n=14)
Patients engaged in MABT(n=42)
12 (29%) completed 1-5 MABT sessions
30 (71%) completed 6-8 MABT sessions

Sustainability Results

- **Health Record Highlights:**
  - 71% of those who had at least one MABT session completed 6 or more sessions of the 8-week protocol.
  - Most common reasons for patients not scheduling were financial (n=6) and inability to contact the patient (n=5).

- **Survey Results Highlights:**
  - The most helpful resources for referring to MABT:
    - educational presentations (n=66),
    - patient vignettes (n=41)
    - team announcements (n=37)
    - flier (n=33)
    - EHR order (n=14)

Sustainability Results

Focus Group Highlights:

- Admin: completion rate was very high for this clinic population.
- Overall agreement: MABT facilitates regulation and coping with distress, including pain, and can have life changing effects.
  - ***I've heard patients say, " I finally learned – people have been telling me for years about pacing – but now I understand it in my body. Now I have this relationship (to my body) and skill set to do something different." MABT is a unique way to learn these skills that works for some people. I've also had patients who've said "no, didn't like it" – it just wasn't for them – was too hard, or whatever. But more patients have expressed increased ability to work with their experience and down-regulate their distress.***
  - ***Its not just having their pain change from a 7 to a 5. For these people to be able to manage their distress and change their relationship to it, and then be able to have a whole new world open to them – that is absolutely life changing. These are not everyday symptoms – this is significant loss of function and quality of life because of overwhelm – we see a lot of psychogenic pain, who have POTS.. people who are loosing jobs, marriages, housing etc. so it's a big deal to get out of something that has been paralyzing them for years.***

Overall Summary

- Implementation indicators of acceptance, and appropriateness were high.
  - Presentations to staff were highly successful to support acceptance and adoption.
- Adoption highest among nurse practitioners compared to other providers.
  - NPs do all intakes and initial referrals in treatment planning so more referrals would be expected.
- Adoption also very high among Admin/Schedulers who heard a lot of feedback on the MABT approach in conversations with patients.
  - Points to the importance of non-clinical staff who have critical role in patient interactions and facilitating changes that affect feasibility in the organizational system.
- Highly Feasible and Penetration into Clinic system was positive/successful.
  - Despite not being covered by insurance in a clinic that mostly delivers insurance billed care, patients chose to pay for MABT and completion rate was high.
- The results demonstrate high implementation feasibility of MABT within an integrative health clinic for chronic pain. The findings suggest the need to better understand the unique value of interoceptive awareness for symptom management of chronic pain

Aim 2: Procedures and Analyses

- Referrals were made from providers for MABT
- Eligilbility requirement: patient agreed to use of data from RedCap surveys for research purposes at initial intake as clinic patient
- RedCap survey administered at baseline, 3 months and 6 months
- IRB approval for a pragmatic trial involving retrospective chart review
- 29 participants are in the final analysis
  - This is how many completed at least 1 of the 2 follow-up assessments
  - Multiple imputations used to handle missingness.
- Repeated measures Anova conducted
- Post hoc analyses to examine change between timepoints
- T scores calculated for PROMIS subscales to examine clinically minimally important differences

Demographics and Health Information

	Mean
Age	48.85
Gender	
Male	5
Female	36
Race	
White	33
Black	4
Unknown	4
Diagnoses	
Chronic Pain	39
Mental Health	11
Number of sessions	
Non-completers	11
Completers	30

Mean change in outcome scores (n=29)

*p<0.05; **p<0.001, ***p<0.0001

Outcomes	Baseline	3 month	3 month-Baseline
	Mean (SEM)	Mean (SEM)	Mean Δ (95%CI)
PROMIS - Primary Outcome			
Physical function	41.8 (1.2)	45.1 (1.3)	3.3 (1.2, 5.3)*
Anxiety	59.5 (1.3)	56.2 (1.5)	-3.4 (-5.8, -0.9)
Depression	54.9 (1.6)	51.9 (1.6)	-2.9 (-5.3, -0.6)
Fatigue	61.9 (1.6)	56.4 (1.4)	-5.4 (-8.5, -2.4)*
Sleep disturbance	54.9 (1.4)	51.1 (1.2)	-3.7 (-5.8, -1.6)*
Social role	43.5 (1.4)	48.6 (1.4)	5 (2.2, 7.8)*
Pain interference	60.5 (1.4)	55.6 (1.6)	-5 (-7.5, -2.4)**
Pain severity	5.2 (0.4)	4.4 (0.4)	-0.8 (-1.4, -0.2)
Secondary Outcomes			
MAIA	2.2 (0.1)	3.1 (0.1)	0.9 (0.6, 1.3)***
DERS-SF	44.8 (2.4)	36 (1.8)	-8.9 (-13.2, -4.6)**
BRS	2.8 (0.1)	3.2 (0.2)	0.4 (0.1, 0.7)

Mean change in outcome scores (n=29) *p<0.05; **p<0.001, ***p<0.0001

Outcomes	6 month-Baseline	6-3month
	Mean Δ (95%CI)	Mean Δ (95%CI)
PROMIS - Primary Outcome		
Physical function	3.7 (1.9, 5.6)**	0.5 (-1.9, 2.9)
Anxiety	-3.1 (-6, -0.2)	0.3 (-2.2, 2.8)
Depression	-1.1 (-4.2, 2)	1.8 (-1.2, 4.9)
Fatigue	-6.4 (-10.1, -2.8)*	-1.0 (-4.4, 2.4)
Sleep disturbance	-4.5 (-7.2, -1.9)*	-0.8 (-3.5, 1.9)
Social role	7.9 (4.5, 11.3)***	2.9 (-0.6, 6.4)
Pain interference	-4.7 (-7.2, -2.2)**	0.3 (-2.7, 3.2)
Pain severity	-1.2 (-2.1, -0.3)	-0.4 (-1.4, 0.6)
Secondary Outcomes		
MAIA	0.9 (0.6, 1.2)***	0 (-0.3, 0.3)
DERS-SF	-9.7 (-13.8, -5.6)***	-0.8 (-5.1, 3.5)
BRS	0.5 (0.2, 0.7)	0.1 (-0.3, 0.5)

In Addition:

- **Physical Function, Anxiety, Fatigue, Sleep Disturbance, Social Role, Pain Interference, and Anxiety** all demonstrated a clinically minimally important change from baseline to 3 month, and from baseline to 6-month follow-up.

- For anxiety: 16 participants (55%) had anxiety T scores at least 1 SD above the norm at baseline
  - At post-test 12 (75% of this subgroup) showed a T score reduction of .5 -1.5 SD

Limitations

- Clinic was an integrative pain clinic
- Small sample
- One group study (no comparison group)
- Primarily white and female participants
- No ability to compare response to intervention among those who attended 1-5 sessions

Outcomes Summary:

- Completion rate of 73% among those who enrolled in MABT program. Positive response highlights perceived value by clients, given out-of-pocket payment.
- Significant improvements in symptomatic distress on 5 of the 8 PROMIS-29 measures.
- Pain interference was the most significantly improved pre-post outcome among the PROMIS scales.
- Improved outcomes were maintained to 6 mo followup.
- Interoceptive sensibility (MAIA) and emotion regulation were significantly increased and maintained.

Reflections of findings:

- Findings align with the staff perspective that patients need help with emotion regulation strategies to enhance their treatment for chronic pain.
- Findings are congruent with previous studies that suggest the importance of emotional regulation for improved pain. *
- Chronic pain is one of many conditions that is understood to involve interoceptive dysfunction.** The findings suggest that improved interoceptive awareness may be an underlying mechanism for key outcomes associated with chronic pain.

- * Gross JJ. Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*.
- **Bonaz et al., 2021; Locatelli et al., 2023