Mindfulness Based Stress Reduction for PTSD

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Poll Question #1

What is your primary role in VA? *Pick the best possible answer.*

– Clinician
– Researcher
– Manager or Policy-maker
– Student, Trainee, or Fellow
– Other
Presentation Outline

• Overview of current evidence-based PTSD treatments
• Define Complementary Alternative Medicine (CAM)
• Summarize existing literature on CAM therapies for PTSD
• Discuss potential benefits of mindfulness meditation for treating PTSD
• Present results of a recent study examining MBSR
PTSD is a high priority in the VA

- 23% of OEF/OIF Veterans receiving VA health care have been diagnosed with PTSD
- PTSD associated with high rates of co-morbidity, disability, and poor quality of life

Sources: Fulton et al. 2015; Kessler et al 2000
VA/DoD Clinical Practice Guidelines for the Management of PTSD

• Evidence-based psychotherapies recommended as first-line treatments:
  – Trauma-focused cognitive behavioral psychotherapies
    • Prolonged exposure (PE)
    • Cognitive processing therapy (CPT)
  – Stress inoculation training (SIT)

Limitations of Current Evidence-based Psychotherapies for PTSD

- High rates of treatment drop out
  - PE/CPT: 30%-38% in RCTs; 32%-44% in clinic based studies
  - 60% of eligible OEF/OIF Veterans failed to begin or dropped out of these treatments
  - Avoidance and difficulties tolerating trauma-focused material likely contribute to dropout

- High rates of non-response
  - 30%-50% of Veterans receiving PE or CPT fail to show clinically significant improvements

- Need for testing of novel treatments for PTSD

Complementary Alternative Medicine (CAM)

- NIH’s National Institute of Complementary Integrative Health
  - Defines CAM as a group of diverse medical practices, products, and systems that are not generally considered part of conventional Western medicine

- National Health Interview Survey estimates over 1/3 of US adults used CAM in the previous 12 months

- CAM use greater among military than civilians

Sources: www.nccih.gov  Clarke et al 2015; Goertz et al 2013
# Categories of Complementary Integrative Health (CIH) Approaches

<table>
<thead>
<tr>
<th>Mind-Body Therapies</th>
<th>Manipulative &amp; Body Based Therapies</th>
<th>Energy Therapies</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Meditation</td>
<td>• Spinal manipulation</td>
<td>• Healing Touch</td>
</tr>
<tr>
<td>• Yoga, Tai chi, Deep-breathing exercises</td>
<td>• Massage therapy</td>
<td>• Reiki, Qi Gong</td>
</tr>
<tr>
<td>• Acupuncture</td>
<td></td>
<td>• Light or magnet therapy</td>
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<tr>
<td>• Guided imagery</td>
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</tbody>
</table>

Source: [www.nccih.gov](http://www.nccih.gov)
RCTs of Complementary Integrative Health Approaches for PTSD

Methodological Limitations:

• Small sample sizes
• Inactive control groups
• Lack of blinding of outcome assessments
• Short duration of follow-up

Source: Data extracted from search of PILOTS database conducted on September 21, 2015 for randomized clinical trials (RCTS) of CAM therapies for PTSD.
What is Mindfulness?

- Kabat-Zinn (1990) defined mindfulness as “paying attention in a particular way: on purpose, in the present moment, and non-judgmentally”
  - Intentional, accepting and non-judgmental focus of one’s attention on the emotions, thoughts and sensations occurring in the present moment

- Mindfulness can be cultivated by meditational practice

Source: Kabat-Zinn, 1990
Poll Question #2

How familiar are you with Mindfulness Based Stress Reduction (MBSR)? Choose the best answer

– I don’t know what MBSR is
– I’ve read about it but can not recall the details
– I know about its outcomes
– I’ve participated in MBSR
– I’ve led MBSR groups or studied MBSR
Mindfulness Based Stress Reduction (MBSR) Program

• Developed in 1979 by Dr. Jon Kabat-Zinn at the University of Massachusetts Medical Center, now widely available

• 8-week intensive training in mindfulness meditation
  – Weekly 2.5 hour group sessions and a day-long retreat
  – Introduces participants to mindfulness practice (attention to the present moment in a non-judgmental and accepting way)

• Sessions include didactic training and formal practice in 3 meditation techniques:
  – Body Scan
  – Sitting Meditation
  – Mindful Yoga
# Potential Benefits of Mindfulness Meditation Practice for PTSD

<table>
<thead>
<tr>
<th>PTSD Symptom</th>
<th>Meditation Benefit</th>
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</thead>
<tbody>
<tr>
<td>Re-experiencing</td>
<td>Enhancing non-judgmental acceptance of internal states reduces level of distress due to intrusive symptoms and trauma-related triggers</td>
</tr>
<tr>
<td>Avoidance</td>
<td>Encourages approaching, rather than avoiding, distressing thoughts and feelings</td>
</tr>
<tr>
<td>Hyperarousal/Hypervigilance</td>
<td>Decreases physiological arousal and stress reactivity</td>
</tr>
</tbody>
</table>

*Source: Vujanovic et al 2013*
Study Objective

Compare Mindfulness Based Stress Reduction (MBSR) to Present-Centered Group Therapy (PCGT) for treating PTSD

**MBSR**
- 9 weekly group sessions (2.5 hours plus day long silent retreat)
- PTSD psychoeducation and treatment rationale
- Didactic training and formal practice in meditation techniques
- Daily home practice encouraged

**PCGT**
- 9 weekly 1.5 hour group sessions
- PTSD psychoeducation and treatment rationale
- Cohesion building and goal setting
- Problem solving current life problems
- Controls for nonspecific therapeutic factors, specific ingredients

RCT: Mindfulness Based Stress Reduction vs Present-Centered Group Therapy (PCGT)

- Subjects met inclusion criteria for PTSD diagnosis or subthreshold PTSD based on CAPS
- Randomized to MBSR or PCGT (active, credible control condition)
- Self-report measures at Weeks 3, 6, 9, and 17
- Blinded, independent evaluators assessed outcomes post-treatment (Week 9) and 2-month follow-up (Week 17)
- Assessed treatment integrity
- Intent-to-treat analyses
Participants

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total (N=116)</th>
<th>MBSR (n=58)</th>
<th>PCGT (n=58)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender, % male</td>
<td>98 (84%)</td>
<td>46 (79%)</td>
<td>52 (90%)</td>
</tr>
<tr>
<td>Age, mean (SD)</td>
<td>58.5 (9.8)</td>
<td>57.6 (10.4)</td>
<td>59.4 (9.2)</td>
</tr>
<tr>
<td>Race, % White</td>
<td>97 (84%)</td>
<td>47 (81%)</td>
<td>50 (86%)</td>
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<tr>
<td>Service Era</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OEF/OIF</td>
<td>11 (10%)</td>
<td>6 (10%)</td>
<td>5 (9%)</td>
</tr>
<tr>
<td>Gulf War</td>
<td>17 (15%)</td>
<td>9 (16%)</td>
<td>8 (14%)</td>
</tr>
<tr>
<td>Vietnam</td>
<td>86 (75%)</td>
<td>41 (70%)</td>
<td>45 (77%)</td>
</tr>
<tr>
<td>Lifetime trauma exposure, number of events, mean (SD)</td>
<td>7.7 (3.1)</td>
<td>7.9 (3.3)</td>
<td>7.5 (3.0)</td>
</tr>
<tr>
<td>Combat</td>
<td>86 (74%)</td>
<td>39 (68%)</td>
<td>47 (80%)</td>
</tr>
<tr>
<td>Sexual assault</td>
<td>32 (28%)</td>
<td>21 (37%)</td>
<td>11 (19%)</td>
</tr>
<tr>
<td>Physical assault</td>
<td>76 (66%)</td>
<td>39 (68%)</td>
<td>37 (63%)</td>
</tr>
</tbody>
</table>
## Outcomes Assessed

<table>
<thead>
<tr>
<th>Measure</th>
<th>Baseline</th>
<th>Week 3</th>
<th>Week 6</th>
<th>Week 9</th>
<th>Week 17</th>
</tr>
</thead>
<tbody>
<tr>
<td>PTSD Checklist (PCL)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Clinician Administered PTSD Scale (CAPS)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Patient Health Questionnaire-9 (PHQ-9)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>WHO Quality of Life-Brief</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Five Facet Mindfulness Questionnaire (FFMQ)</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Credibility/Expectancy Questionnaire</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment Satisfaction</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>
Statistical Analyses

• Intention-to-treat analyses were conducted for all outcomes
• Mixed-effects models were used to analyze the efficacy of MBSR compared with PCGT in reducing PTSD symptoms over 9 weeks of treatment and at 2-months follow-up
• For each outcome, a maximum likelihood growth curve model included treatment, time, and treatment x time interaction as fixed effects and the intercept and slope as random effects
• Between-group effect sizes were computed as Cohen’s d
• Calculated outcomes:
  – % of participants showing clinically significant improvement in symptoms based on established MCIDs
  – % with loss of PTSD diagnosis
Poll Question #3

How effective do you think MBSR might be for treating PTSD symptoms for Veterans?

– At least moderately effective
– Might improve quality of life, but not PTSD symptoms
– Not at all effective, maybe harmful
– Not sure
RESULTS
PTSD Symptom Severity (self-report)

MBSR vs PCGT
Intent-to Treat Analysis (N=116)

BGΔ p = .005

BGΔ p = .002

BGΔ p < .001

BGΔ = Between-Treatment Difference in Improvement from Baseline.
PTSD Severity (interview-rated)

MBSR vs. PCGT
Intent-to-Treat Sample (N=116)

BGΔ p=.004
Depression Symptom Severity (self-report)

MBSR vs. PCGT
Intent-to-Treat Sample (N=116)

Baseline | Post-Tx | 2-Month Follow-Up
---|---|---
PHQ-9 Total Score

BGΔ p=.06
Quality of Life (self-report)

MBSR vs. PCGT
Intent-to-Treat Sample (N=116)

WHOQOL-BREF Total Score

Baseline | Post-Tx | 2-Month Follow-Up

MBSR
PCGT

BGΔ p=.075

BGΔ p=.004
No significant differences between groups at Post-Treatment or 2-Month Follow-up
Clinically Significant Improvement

- **PCL**: Post-Tx 2-Month Follow-up % Improved
  - MBSR
  - PCGT
  - $p = .029$

- **CAPS**: Post-Tx 2-Month Follow-up % Improved

- **PHQ-9**: Post-Tx 2-Month Follow-up % Improved

% Improved

0 10 20 30 40 50 60 70 80

0 10 20 30 40 50 60 70 80

0 10 20 30 40 50 60 70 80
Mindfulness Skills (self-report)

MBSR vs. PCGT
Intent-to-Treat Sample (N=116)

- Baseline
- Week 3
- Week 6
- Week 9 (Post-Tx)
- Week 17 (2-Month Follow-up)

**FFMQ Total Score**

- **MBSR**
- **PCGT**

- BGΔ p=.05
- BGΔ p<.001
- BGΔ p<.001
Mindfulness Skills Change (baseline to post-treatment) correlated with 2-Month Follow-up

<table>
<thead>
<tr>
<th>Outcome at 2-Months</th>
<th>$r$</th>
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<tbody>
<tr>
<td>PTSD Symptom Severity (PCL)</td>
<td>-0.46</td>
</tr>
<tr>
<td>Clinician Administered PTSD Scale (CAPS)</td>
<td>-0.33</td>
</tr>
<tr>
<td>Patient Health Questionnaire-9 (PHQ-9)</td>
<td>-0.44</td>
</tr>
<tr>
<td>WHO Quality of Life-Brief (WHO-QOL-BREF)</td>
<td>0.42</td>
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</tbody>
</table>
Treatment Completion and Satisfaction

• No differences between MBSR and PCGT on ratings:
  – Treatment credibility
  – Expectancy of therapeutic outcome
  – Satisfaction

• Drop-out higher in MBSR than PCGT (22.4% vs 6.9%, p < .05), but findings suggest MBSR completion rates may be higher than for first-line PTSD treatments

• PCGT completed greater mean number of sessions than MBSR (8.1 vs. 7.0, p < .01)
HOW DO EFFECT SIZES FOR MBSR COMPARE TO THOSE OF EXISTING EBTS FOR PTSD?
<table>
<thead>
<tr>
<th>Study</th>
<th>Polusny et al 2015</th>
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<tr>
<td></td>
<td>MBSR (n=58)</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td></td>
</tr>
<tr>
<td>Self-Report PTSD Symptoms (PCL)</td>
<td></td>
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<tr>
<td>Baseline</td>
<td>63.6</td>
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<tr>
<td>Immediate Post-Tx</td>
<td>55.7</td>
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<tr>
<td>Follow-up (2-3 months)</td>
<td>54.4</td>
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<tr>
<td>Between-group Effect Size</td>
<td>(d=0.40)</td>
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<tr>
<td>Clinician Rated PTSD (CAPS/PSS-I)</td>
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<tr>
<td>Baseline</td>
<td>69.9</td>
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<tr>
<td>Immediate Post-Tx</td>
<td>56.3</td>
</tr>
<tr>
<td>Follow-up (2-3 months)</td>
<td>49.8</td>
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<tr>
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<td>CPT-C (n=56)</td>
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<td>46.8</td>
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<tr>
<td>6-Month Follow-up</td>
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<tr>
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<td></td>
<td>20.0</td>
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<tr>
<td>Between-group Effect Size</td>
<td>(d=0.41)</td>
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<td>------------------------------</td>
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<tr>
<td>Outcome</td>
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</table>
Conclusions

• Results provide support for the efficacy of MBSR as a treatment for PTSD among Veterans
  – MBSR resulted in greater improvements in PTSD symptom severity and quality of life than PCGT
  – Gains in quality of life maintained at follow-up for MBSR, but not for PCGT
  – Increased mindfulness skills following MBSR predicted improvements across all outcomes
• Effect sizes similar to PE/CPT, but drop-out lower (22.4%)
Limitations and Future Directions

• Short follow-up time period
• PCGT may not have fully accounted for all non-specific factors present in MBSR (e.g., therapist expectations)
• Active control was unequal in duration of sessions
• Groups differed in baseline PTSD symptom severity with PCGT participants reporting lower symptoms
• Predominantly white male sample serving during the Vietnam Era from one geographical region
• MBSR as a primary, first line treatment for PTSD?
Resources

- Complementary Integrative Health Evidence Synthesis Reports

- Mobile App: Mindfulness Coach
  - Mobile smart phone app that introduces core concepts of mindfulness, including education to help the user understand the benefits of mindfulness, guided exercises, and logs for tracking mindfulness practice
  - App can be used on its own as a mindfulness tool or to augment face-to-face care with a health care professional
  - Download the app free from the iTunes app store or VA mobile app store

- National Center for Complementary Integrative Health (NCCIH) Website
  - Part of the National Institutes of Health, NCCIH is the Federal Government's lead agency for scientific research on complementary and integrative health approaches
  - https://nccih.nih.gov/
Questions/Comments?

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References

References