Mindfulness Based Stress Reduction for PTSD

Melissa A. Polusny, PhD, LP

Staff Psychologist, Post-Traumatic Stress Recovery Program

Clinician Investigator, Center for Chronic Disease Outcomes Research

Minneapolis VA Health Care System

Associate Professor, University of Minnesota Medical School

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- Principal Investigator:
  - Kelvin Lim, MD
- Co-Investigators:
  - Christopher Erbes, PhD
  - Melissa Polusny, PhD
  - Paul Thuras, PhD
  - Greg Lamberty, PhD ABPP
- Collaborators:
  - Rose Collins, PhD
  - John Rodman, PhD
- Consultants
  - Terry Pearson, RPh, MBA
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Poll Question #1

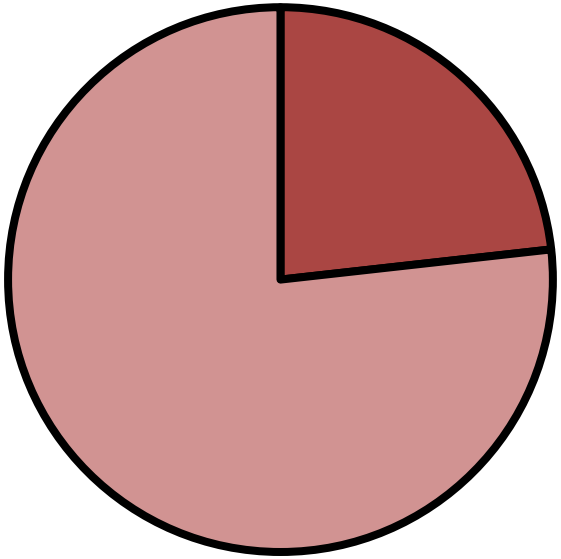
What is your primary role in VA? *Pick the best possible answer.*

- 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

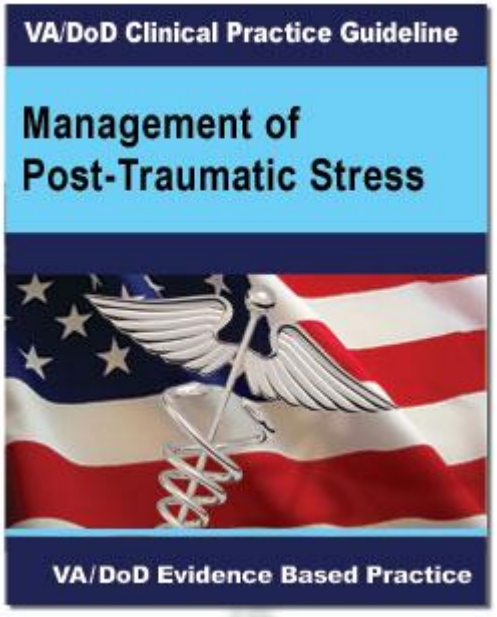


- 23% of OEF/OIF Veterans receiving VA health care have been diagnosed with PTSD
- PTSD associated with high rates of co-morbidity, disability, and poor quality of life

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)



Source: Department of Veterans Affairs & Department of Defense (2010). VA/DoD Clinical Practice Guideline for Management of Post-Traumatic Stress. http://www.healthquality.va.gov/guidelines/MH/ptsd/cpgPTSDFULL201011612c.pdf

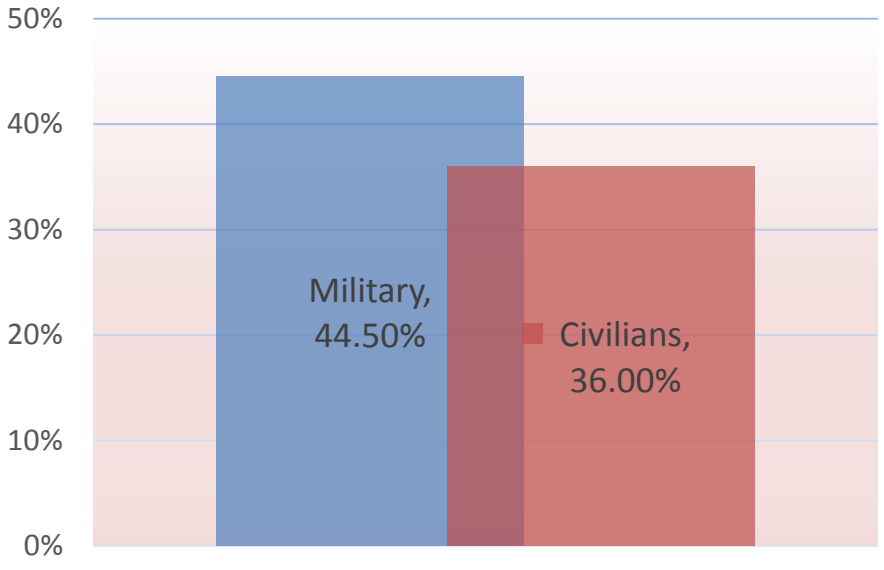
Limitations of Current Evidence-based Psychotherapies for PTSD

- 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

Sources: Schnurr et al 2007; Forbes et al 2012; Suris et al 2013; Tuerk et al 2011; Jeffreys et al 2014; Kehle-Forbes et al in press; Eftekari et al. 2013; Steenkamp et al., 2015

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



12 Month Prevalence of CAM Use

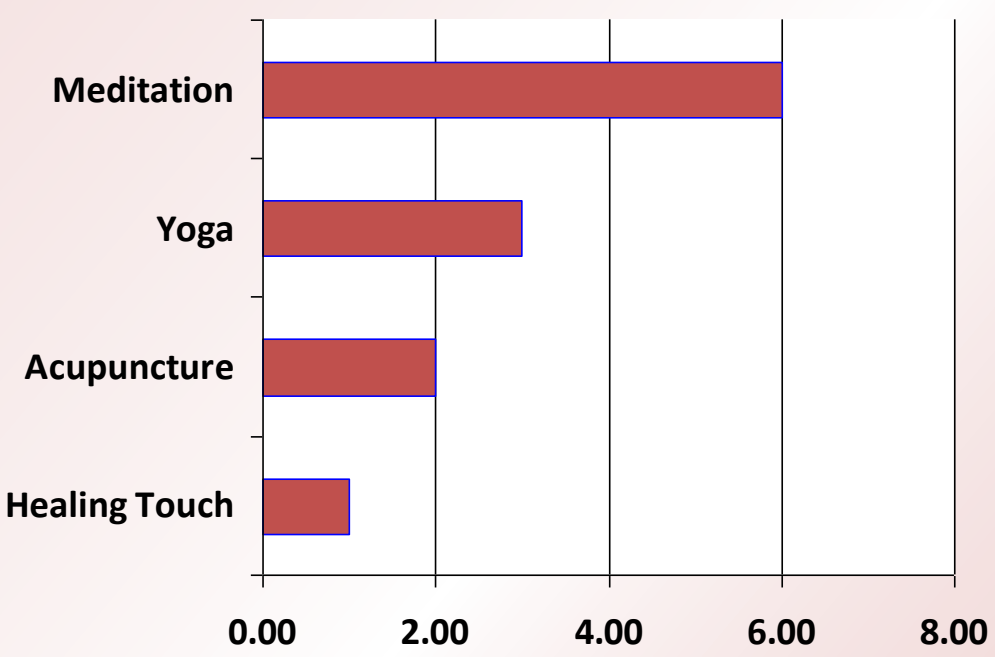
Sources: www.nccih.gov Clarke et al 2015; Goertz et al 2013

Categories of Complementary Integrative Health (CIH) Approaches

Mind-Body Therapies	• Meditation • Yoga, Tai chi, Deep-breathing exercises • Acupuncture • Guided imagery
Manipulative & Body Based Therapies	• Spinal manipulation • Massage therapy
Energy Therapies	• Healing Touch • Reiki, Qi Gong • Light or magnet therapy

Source: www.nccih.gov

RCTs of Complementary Integrative Health Approaches for PTSD



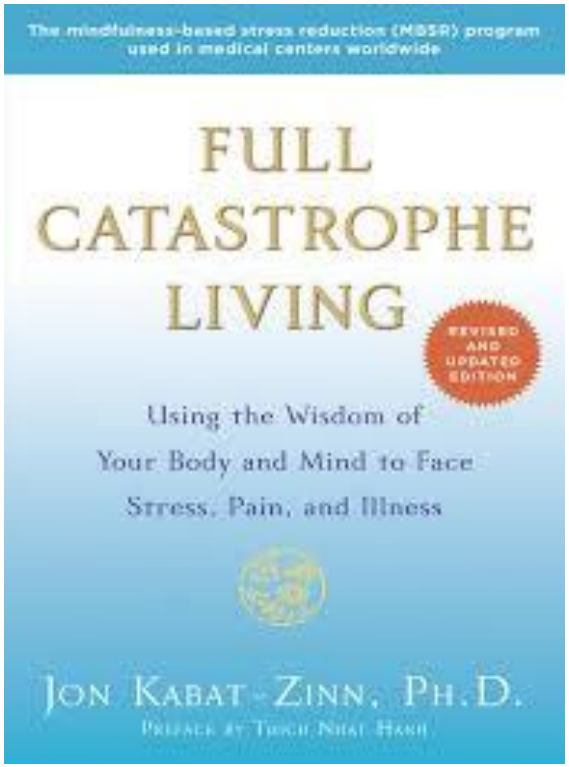
Methodological Limitations:

- 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

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

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

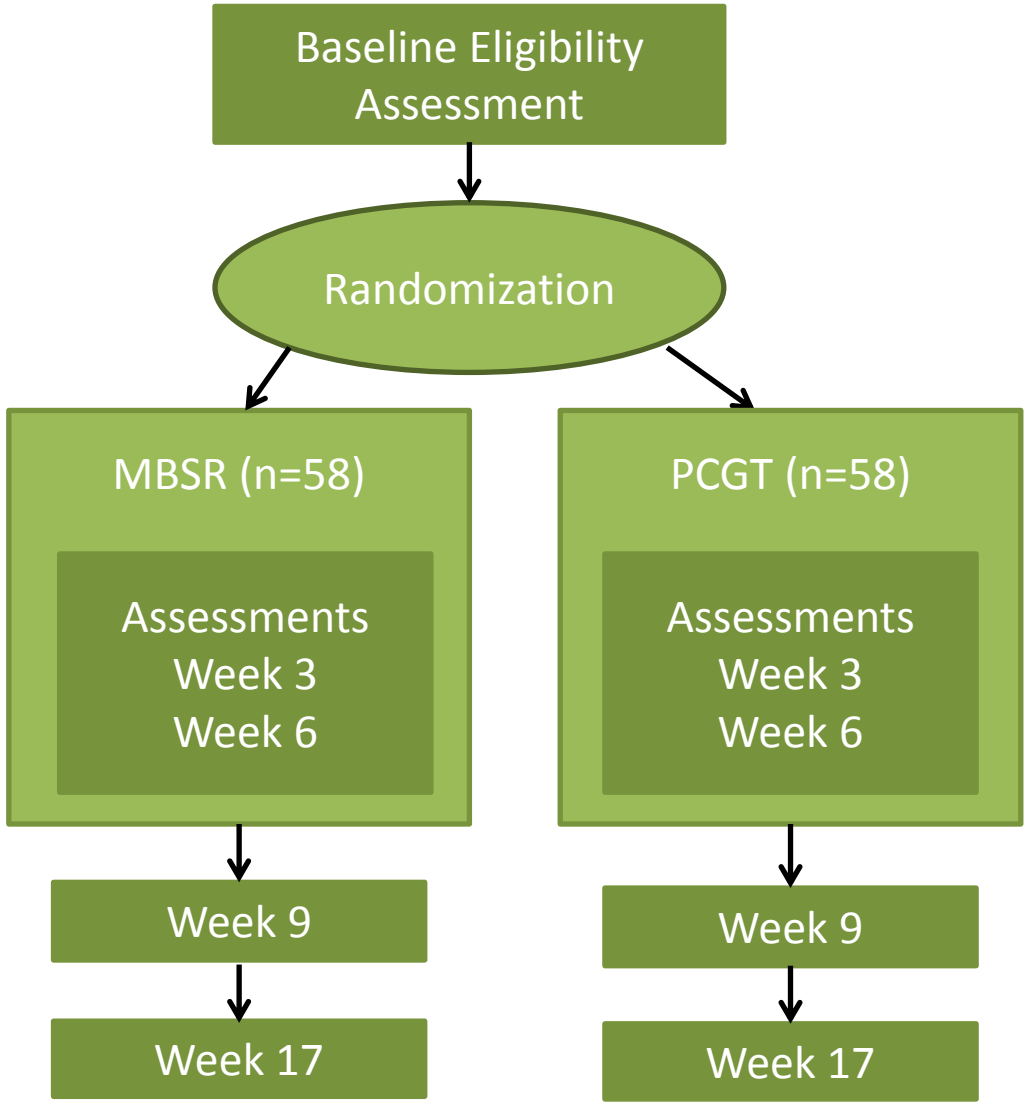
PCGT

- 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

Source: Polusny MA, Erbes CR, Thuras P, et al. Mindfulness-Based Stress Reduction for Posttraumatic Stress Disorder Among Veterans: A Randomized Clinical Trial. *JAMA.* 2015;314(5):456-465.

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

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

Outcomes Assessed

Measure	Baseline	Week 3	Week 6	Week 9	Week 17
PTSD Checklist (PCL)	X	X	X	X	X
Clinician Administered PTSD Scale (CAPS)	X			X	X
Patient Health Questionnaire-9 (PHQ-9)	X			X	X
WHO Quality of Life-Brief	X			X	X
Five Facet Mindfulness Questionnaire (FFMQ)	X	X	X	X	X
Credibility/Expectancy Questionnaire		X			
Treatment Satisfaction				X	

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

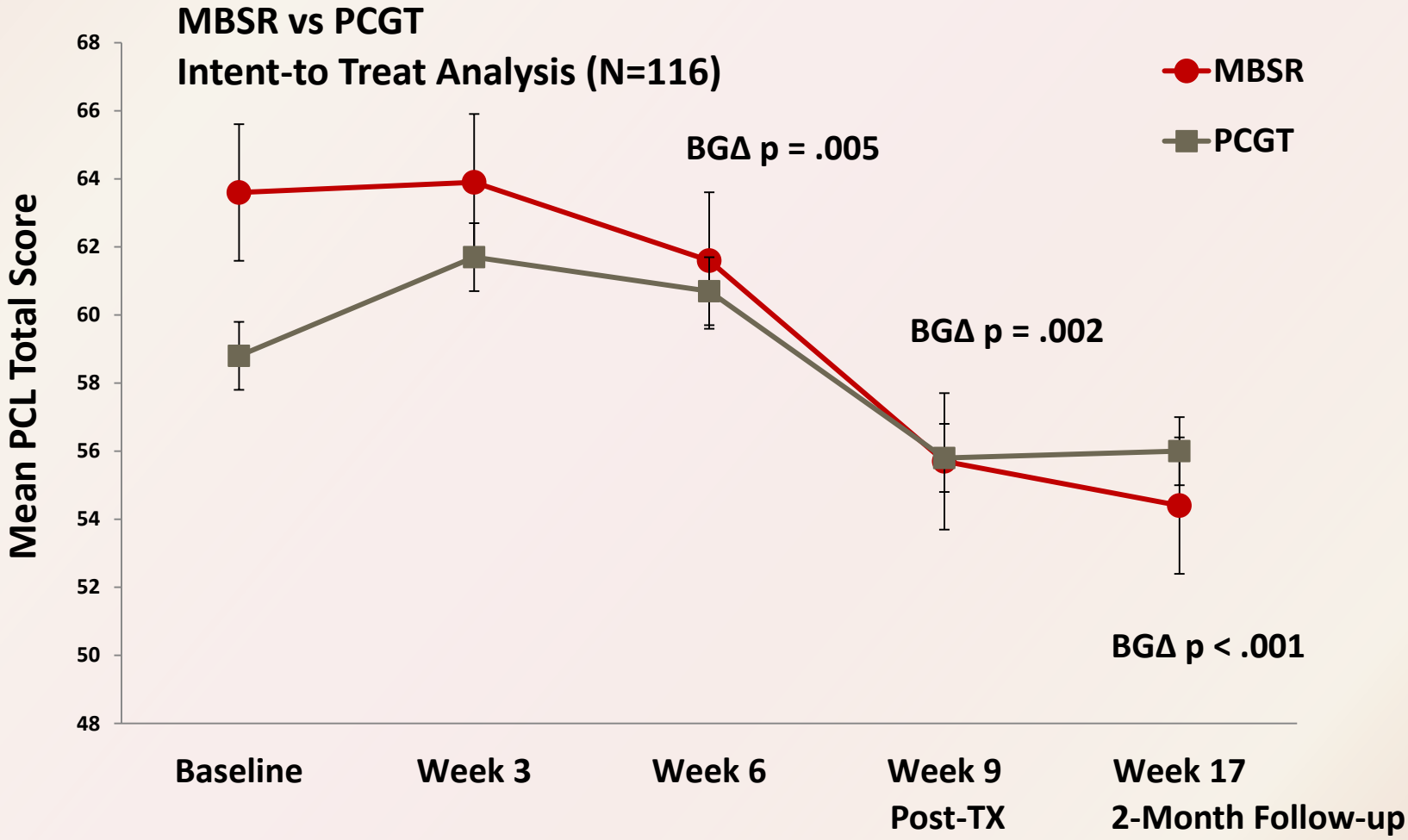
Poll Question #3

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

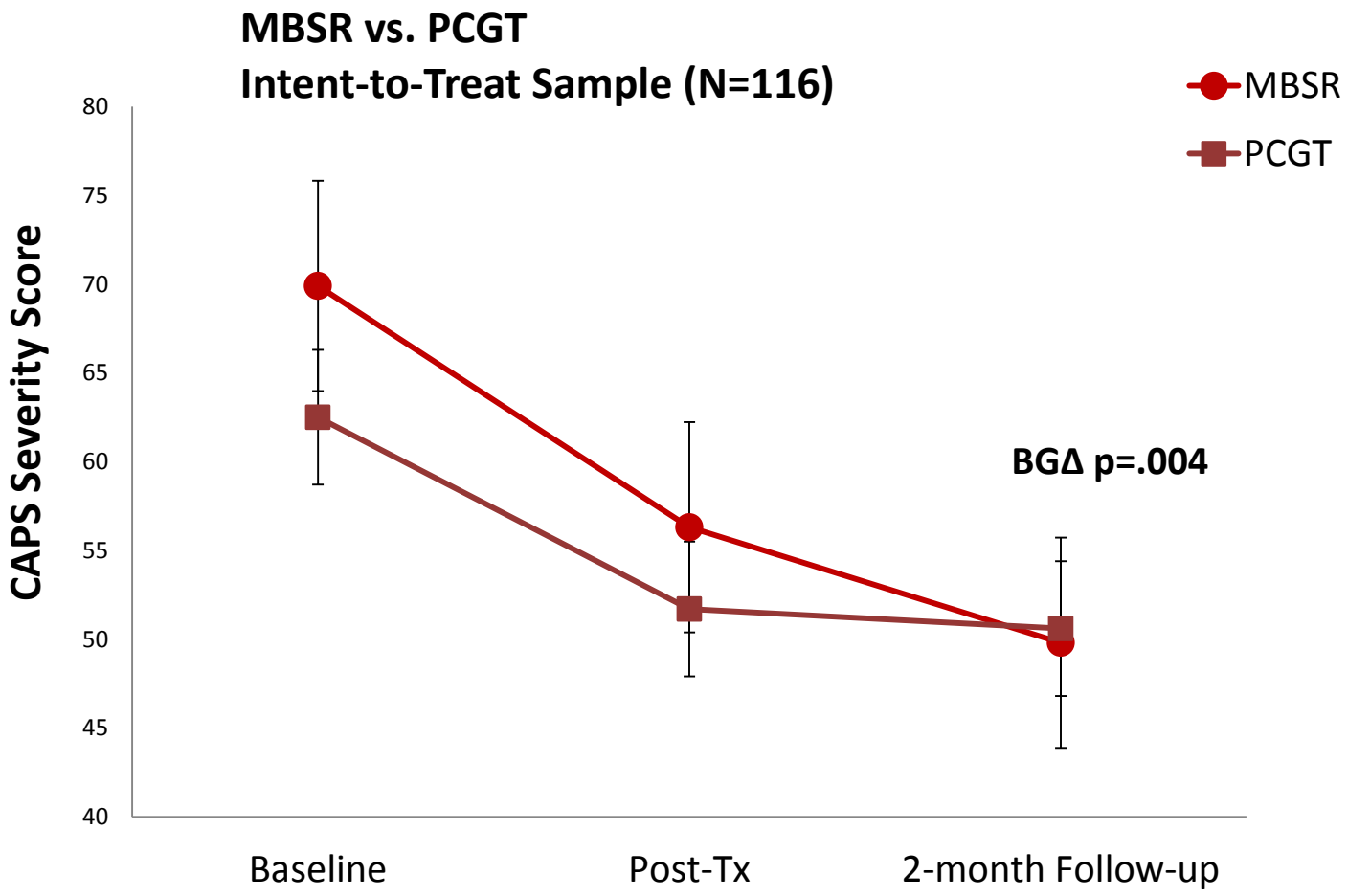
RESULTS

PTSD Symptom Severity (self-report)

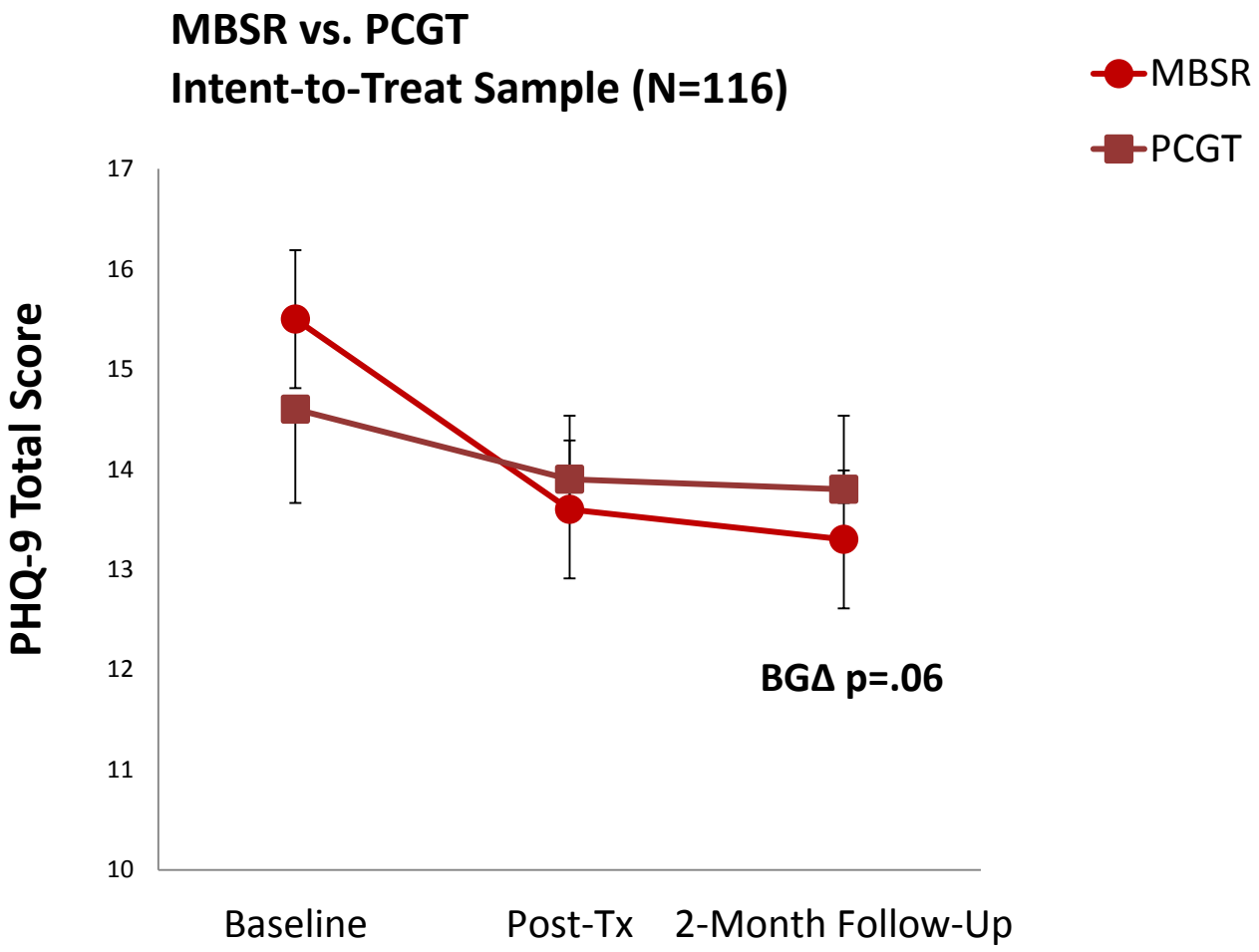


BGΔ = Between-Treatment Difference in Improvement from Baseline.

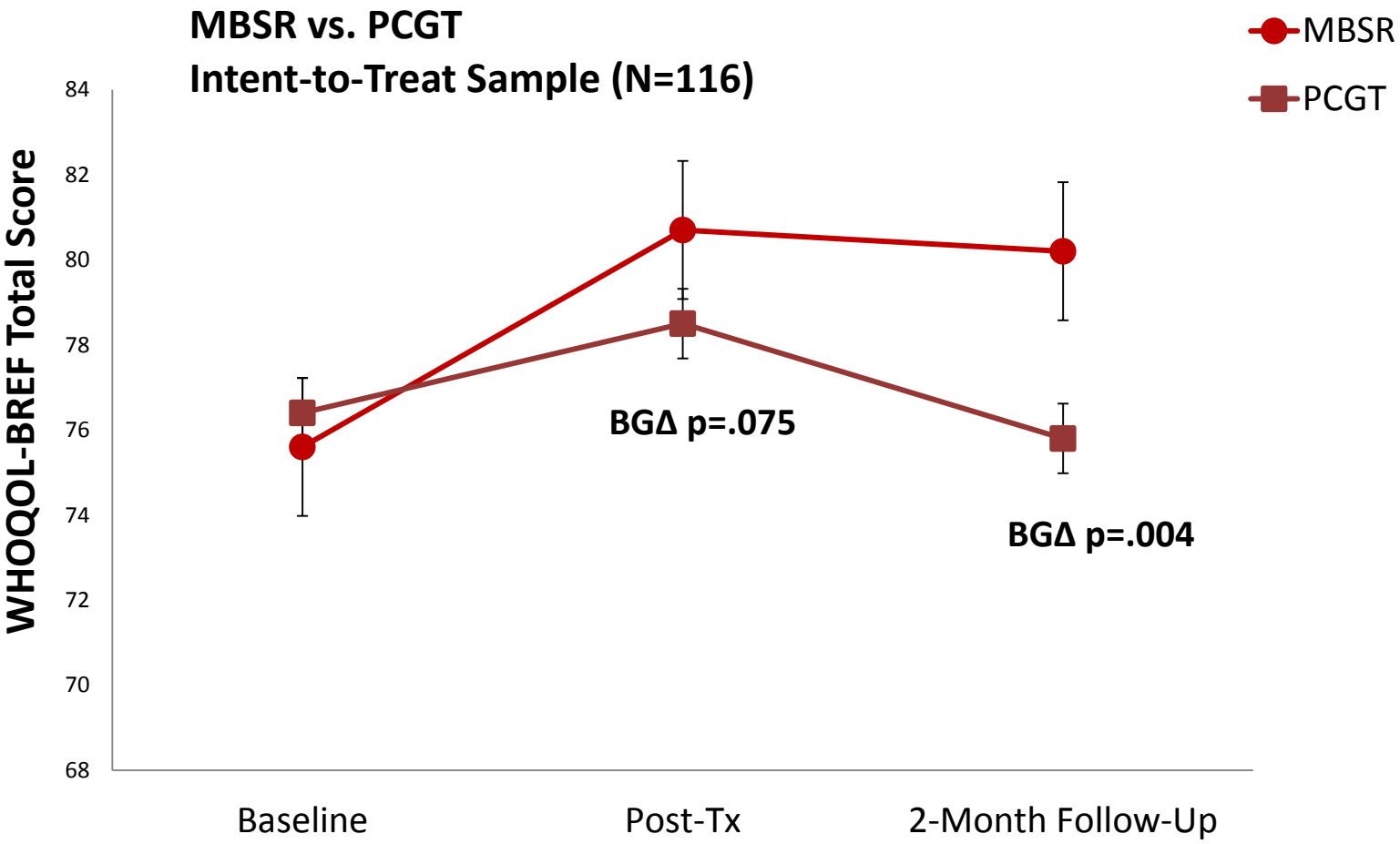
PTSD Severity (interview-rated)



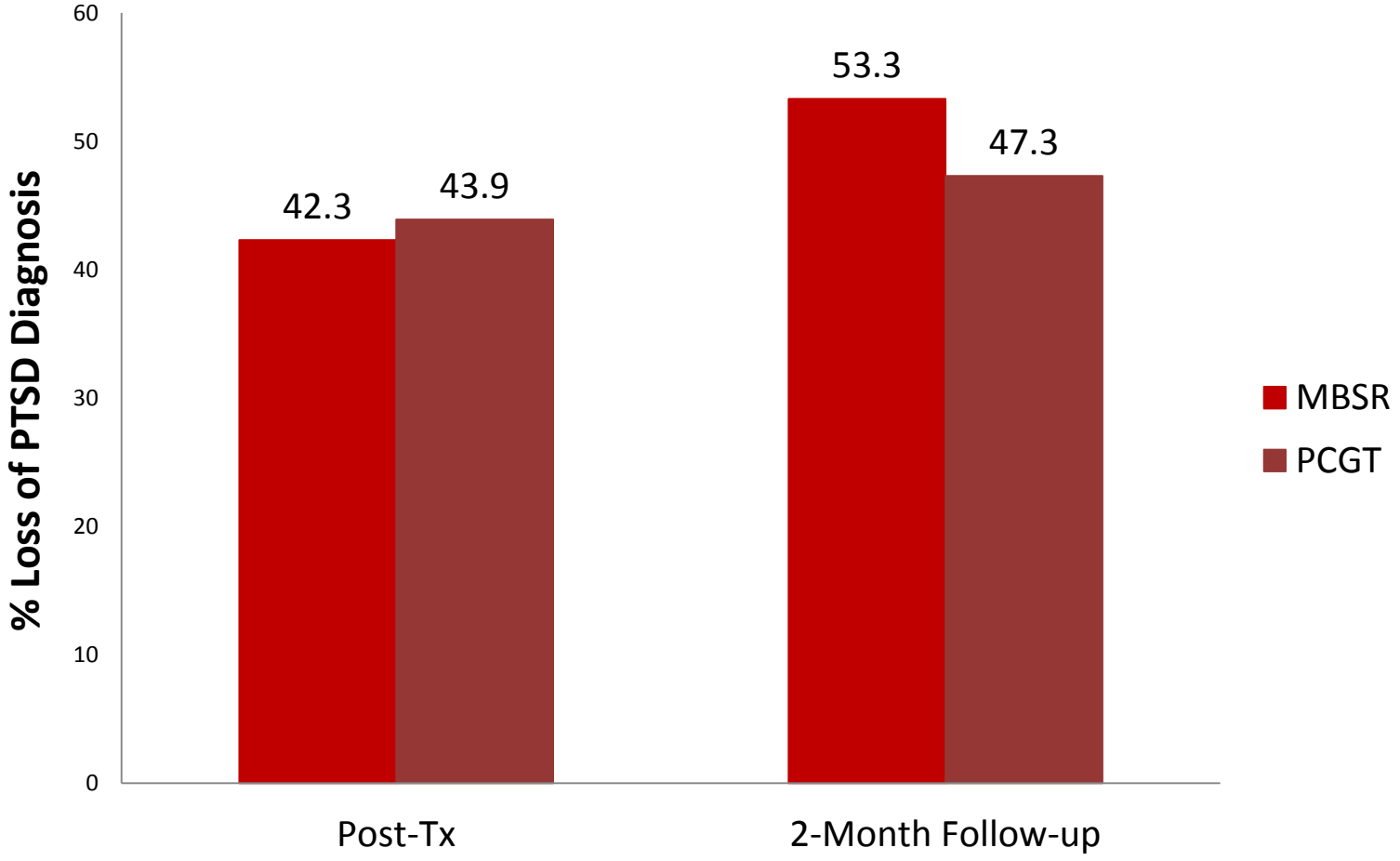
Depression Symptom Severity (self-report)



Quality of Life (self-report)

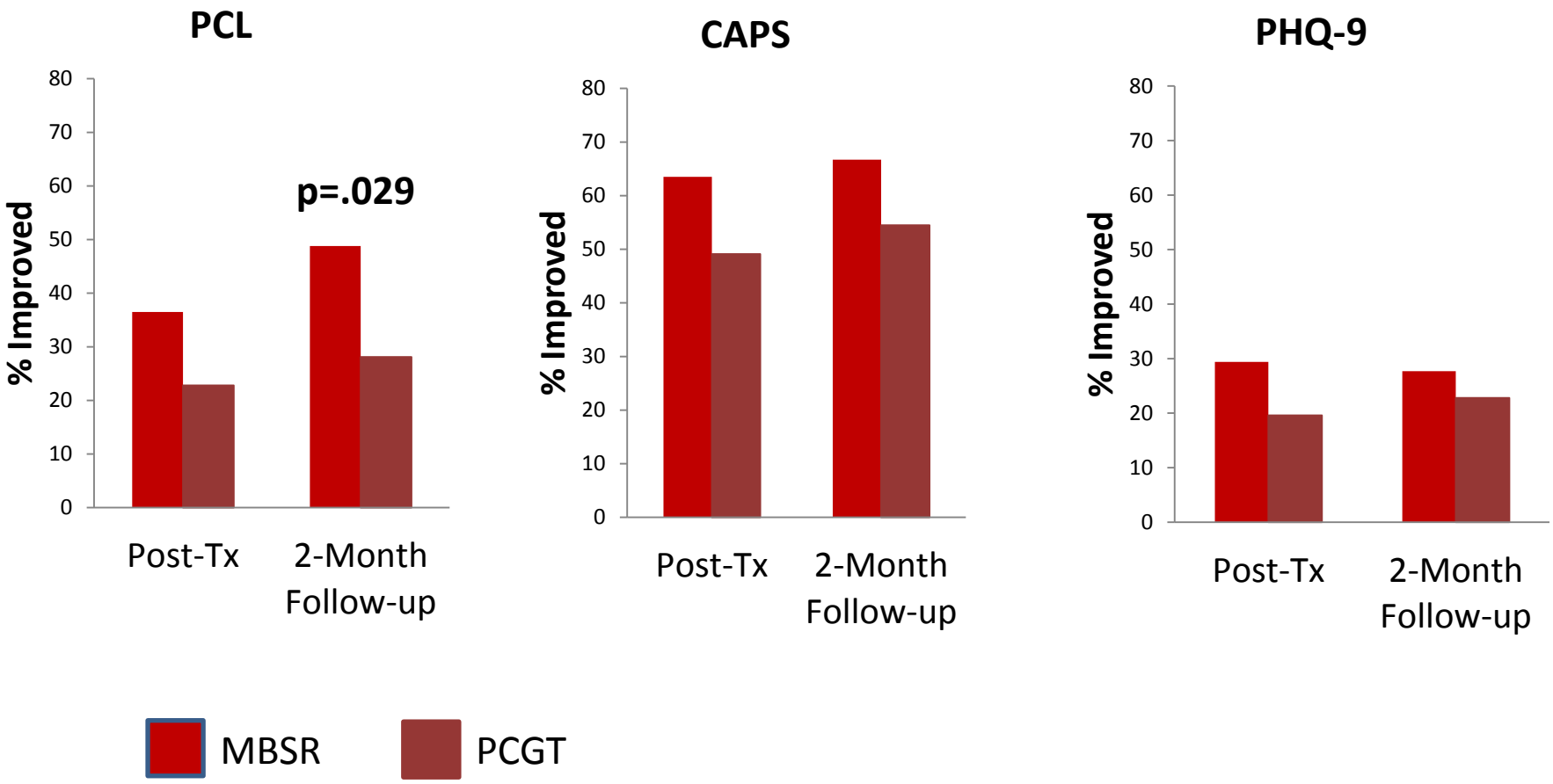


Loss of PTSD Diagnosis

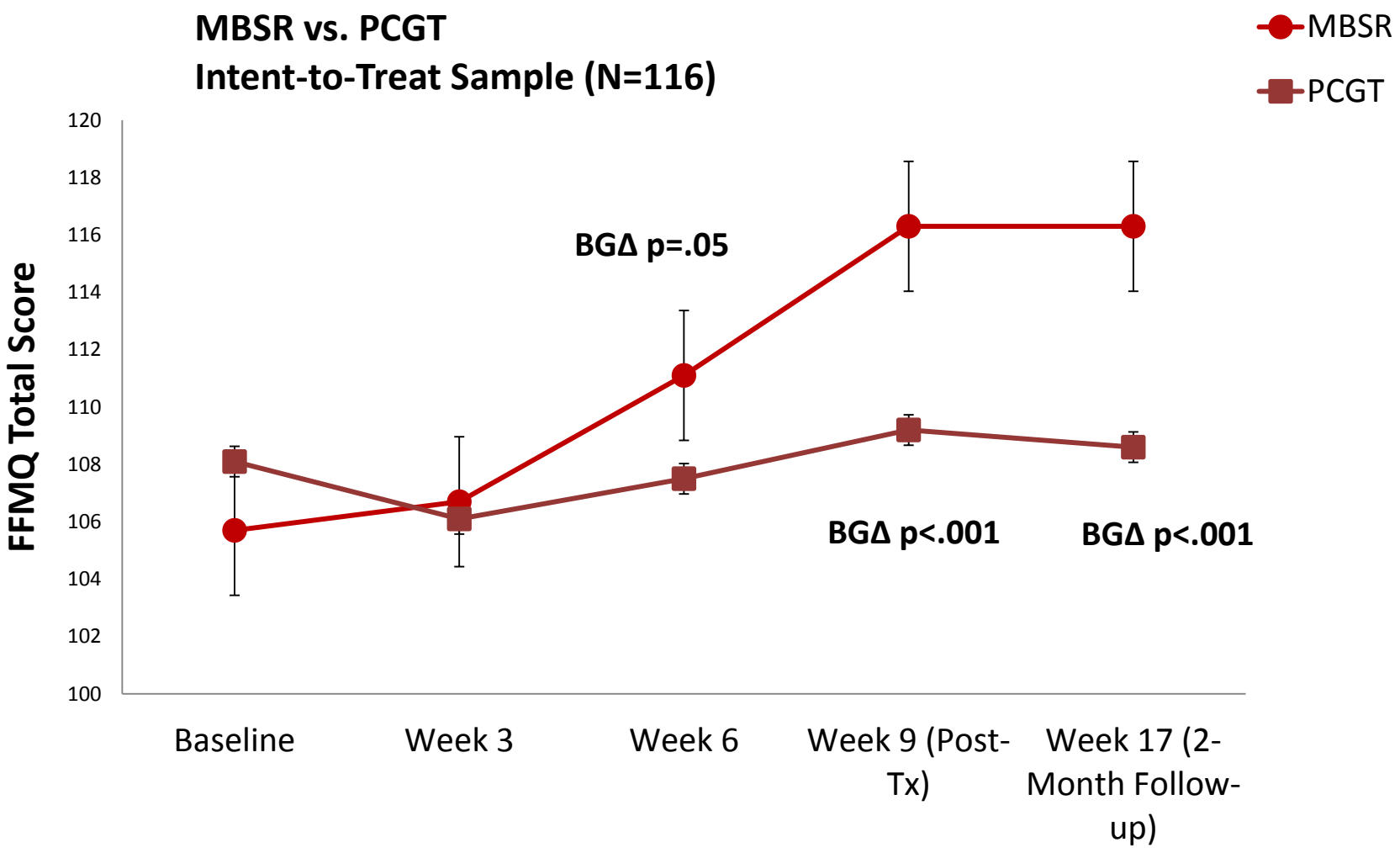


No significant differences between groups at Post-Treatment or 2-Month Follow-up

Clinically Significant Improvement



Mindfulness Skills (self-report)



Mindfulness Skills Change (baseline to post-treatment) correlated with 2-Month Follow-up

Outcome at 2-Months	*r*
PTSD Symptom Severity (PCL)	-0.46
Clinician Administered PTSD Scale (CAPS)	-0.33
Patient Health Questionnaire-9 (PHQ-9)	-0.44
WHO Quality of Life-Brief (WHO-QOL-BREF)	0.42

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?

Study	Polusny et al 2015	
Outcome	MBSR (n=58)	PCGT (n=58)
Self-Report PTSD Symptoms (PCL)		
Baseline	63.6	58.8
Immediate Post-Tx	55.7	55.8
Follow-up (2-3 months)	54.4	56.0
Between-group Effect Size	*d=0.40*	
Clinician Rated PTSD (CAPS/PSS-I)		
Baseline	69.9	62.5
Immediate Post-Tx	56.3	51.7
Follow-up (2-3 months)	49.8	50.6
Between-group Effect Size	*d=0.41*	

Study	Polusny et al 2015		Resick et al 2015			
Outcome	MBSR (n=58)	PCGT (n=58)	CPT-C (n=56)	PCT (n=52)		
Self-Report PTSD Symptoms (PCL)						
Baseline	63.6	58.8	59.3	58.5		
Immediate Post-Tx	55.7	55.8	47.8	51.2		
Follow-up (2-3 months)	54.4	56.0	46.8	50.2		
6-Month Follow-up			46.1	48.6		
Between-group Effect Size	*d=0.40*		*d=0.40*			
Clinician Rated PTSD (CAPS/PSS-I)						
Baseline	69.9	62.5	27.7	27.1		
Immediate Post-Tx	56.3	51.7	23.0	23.9		
Follow-up (2-3 months)	49.8	50.6				
6-Month Follow-up			20.0	21.0		
Between-group Effect Size	*d=0.41*		*d=0.22*			

Study	Polusny et al 2015		Resick et al 2015		Schnurr et al 2007	
Outcome	MBSR (n=58)	PCGT (n=58)	CPT-C (n=56)	PCT (n=52)	PE (n=141)	PCT (n=143)
Self-Report PTSD Symptoms (PCL)						
Baseline	63.6	58.8	59.3	58.5	58.2	57.1
Immediate Post-Tx	55.7	55.8	47.8	51.2	41.6	48.9
Follow-up (2-3 months)	54.4	56.0	46.8	50.2	43.5	48.8
6-Month Follow-up			46.1	48.6	44.6	48.5
Between-group Effect Size	*d=0.40*		*d=0.40*		*d=0.40*	
Clinician Rated PTSD (CAPS/PSS-I)						
Baseline	69.9	62.5	27.7	27.1	77.6	77.9
Immediate Post-Tx	56.3	51.7	23.0	23.9	52.9	60.1
Follow-up (2-3 months)	49.8	50.6			49.7	56.0
6-Month Follow-up			20.0	21.0	50.4	54.5
Between-group Effect Size	*d=0.41*		*d=0.22*		*d=0.27*	

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**
  http://www.hsrd.research.va.gov/publications/esp/cam-ptsd.cfm
  http://www.hsrd.research.va.gov/publications/esp/cam_mindfulness.cfm

- **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?

Contact Information

Melissa Polusny PhD, LP (melissa.polusny@va.gov)

Edward H. Livingston, MD, FACS, AGAF
(edward.livingston@jamanetwork.org)
Deputy Editor, Clinical Reviews and Education
JAMA

References

http://jama.jamanetwork.com/article.aspx?articleid=2422542

Research

Original Investigation

Mindfulness-Based Stress Reduction for Posttraumatic Stress Disorder Among Veterans
A Randomized Clinical Trial

Melissa A. Polusny, PhD; Christopher R. Erbes, PhD; Paul Thuras, PhD; Amy Moran, MA; Greg J. Lamberty, PhD; Rose C. Collins, PhD; John L. Rodman, PhD; Kelvin O. Lim, MD

IMPORTANCE Mindfulness-based interventions may be acceptable to veterans who have poor adherence to existing evidence-based treatments for posttraumatic stress disorder (PTSD).

OBJECTIVE To compare mindfulness-based stress reduction with present-centered group therapy for treatment of PTSD.

DESIGN, SETTING, AND PARTICIPANTS Randomized clinical trial of 116 veterans with PTSD recruited at the Minneapolis Veterans Affairs Medical Center from March 2012 to December 2013. Outcomes were assessed before, during, and after treatment and at 2-month follow-up. Data collection was completed on April 22, 2014.

INTERVENTIONS Participants were randomly assigned to receive mindfulness-based stress reduction therapy (n = 58), consisting of 9 sessions (8 weekly 2.5-hour group sessions and a daylong retreat) focused on teaching patients to attend to the present moment in a nonjudgmental, accepting manner; or present-centered group therapy (n = 58), an active-control condition consisting of 9 weekly 1.5-hour group sessions focused on current life problems.

MAIN OUTCOMES AND MEASURES The primary outcome, change in PTSD symptom severity over time, was assessed using the PTSD Checklist (range, 17-85; higher scores indicate greater severity; reduction of 10 or more considered a minimal clinically important difference) at baseline and weeks 3, 6, 9, and 17. Secondary outcomes included PTSD diagnosis and symptom severity assessed by independent evaluators using the Clinician-Administered PTSD Scale along with improvements in depressive symptoms, quality of life, and mindfulness.

RESULTS Participants in the mindfulness-based stress reduction group demonstrated greater improvement in self-reported PTSD symptom severity during treatment (change in mean PTSD Checklist scores from 63.6 to 55.7 vs 58.8 to 55.8 with present-centered group therapy; between-group difference, 4.95; 95% CI, 1.92-7.99; P=.002) and at 2-month follow-up (change in mean scores from 63.6 to 54.4 vs 58.8 to 56.0, respectively; difference, 6.44; 95% CI, 3.34-9.53, P < .001). Although participants in the mindfulness-based stress reduction group were more likely to show clinically significant improvement in self-reported PTSD symptom severity (48.9% vs 28.1% with present-centered group therapy; difference, 20.9%; 95% CI, 2.2%-39.5%; P = .03) at 2-month follow-up, they were no more likely to have loss of PTSD diagnosis (53.3% vs 47.3%, respectively; difference, 6.0%; 95% CI, −14.1% to 26.2%; P = .55).

CONCLUSIONS AND RELEVANCE Among veterans with PTSD, mindfulness-based stress reduction therapy, compared with present-centered group therapy, resulted in a greater decrease in PTSD symptom severity. However, the magnitude of the average improvement suggests a modest effect.

TRIAL REGISTRATION clinicaltrials.gov Identifier: NCT01548742

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Author Video Interview and JAMA Report Video at jama.com

Supplemental content at jama.com

Author Affiliations: Minneapolis Veterans Affairs Health Care System, Minneapolis, Minnesota (Polusny, Erbes, Thuras, Moran, Lamberty, Collins, Rodman, Lim); Center for Chronic Disease Outcomes Research, Minneapolis, Minnesota (Polusny, Erbes); Department of Psychiatry, University of Minnesota, Minneapolis (Polusny, Erbes, Thuras, Lamberty, Lim).

Corresponding Author: Melissa A. Polusny, PhD, Minneapolis VA Medical Center (B68-2), One Veterans Dr, Minneapolis, MN 55417 (melissa.polusny@va.gov).

References

- Clarke, T. C., Black, L. I., Stussman, B. J., Barnes, P. M., & Nahin, R. L. (2015). Trends in the use of complementary health approaches among adults: United States, 2002–2012. *National Health Statistics Reports*, 79, 1-16.
- Department of Veterans Affairs & Department of Defense (2010). VA/DoD Clinical Practice Guideline for Management of Post-Traumatic Stress. http://www.healthquality.va.gov/guidelines/MH/ptsd/cpgPTSDFULL201011612c.pdf
- Eftekhari A, Ruzek JI, Crowley JJ, Rosen CS, Greenbaum MA, Karlin BE. (2013). Effectiveness of national implementation of prolonged exposure therapy in Veterans Affairs care. *JAMA Psychiatry,* 70, 949-955.
- Forbes D, Lloyd D, Nixon RD et al. (2012). A multisite randomized controlled effectiveness trial of cognitive processing therapy for military-related posttraumatic stress disorder. *J Anxiety Disorders,* 26, 442-452.
- Fulton JJ, Calhoun PS, Wagner HR et al. (2015). The prevalence of posttraumatic stress disorder in Operation Enduring Freedom/Operation Iraqi Freedom (OEF/OIF) Veterans: A meta-analysis. *J Anxiety Disorders,* 31, 98-107.
- Goertz, C., Marriott, B. P., Finch, M. D., Bray, R. M., Williams, T. V., Hourani, L. L., ... & Jonas, W. B. (2013). Military report more complementary and alternative medicine use than civilians. *The Journal of Alternative and Complementary Medicine*, *19*(6), 509-517.
- Jeffreys MD, Reinfeld C, Nair PV, Garcia HA, Mata-Galan E, Rentz TO. (2014). Evaluating treatment of posttraumatic stress disorder with cognitive processing therapy and prolonged exposure therapy in a VHA specialty clinic. *J Anxiety Disorders,* 28, 108-114.
- Kabat-Zinn, J.. (1990). *Full Catastrophe Living: Using the Wisdom of Your Body and Mind to Face Stress, Pain, and Illness*. Random House Publishing Group, 1990.
- Kehle-Forbes SM, Meis LA, Spoont M, Polusny MA. (in press). Treatment initiation and dropout from prolonged exposure and cognitive processing therapy in a VA outpatient clinic. *Psychol Trauma.*
- Kessler RC. Posttraumatic stress disorder: The burden to the individual and to society. (2000) *J Clin Psychiatry,* 61, 4-12.
- Polusny, M., Erbes, C., Thuras, P., Moran, A., Lamberty, G. (2015). Mindfulness-based stress reduction for posttraumatic stress disorder among veterans: a randomized control study. Journal of the American Medical Association, 314.5. 456-465.
- Resick, P. A., Wachen, J. S., Mintz, J., Young-McCaughan, S., Roache, J. D., Borah, A. M., ... & Peterson, A. L. (2015). A Randomized Clinical Trial of Group Cognitive Processing Therapy Compared With Group Present-Centered Therapy for PTSD Among Active Duty Military Personnel. Journal of Consulting and Clinical Psychology, May 4 , 2015, No Pagination Specified. http://dx.doi.org/10.1037/ccp0000016
- Schnurr PP, Friedman MJ, Engel CC et al. (2007). Cognitive behavioral therapy for posttraumatic stress disorder in women: A randomized controlled trial. *JAMA,* 297, 820-830.
- Steenkamp, M. M., Litz, B. T., Hoge, C. W., & Marmar, C. R. (2015). Psychotherapy for military-related PTSD: a review of randomized clinical trials. *JAMA, 314,* 489-500.
- Suris A, Link-Malcolm J, Chard K, Ahn C, North C. (2013). A randomized clinical trial of cognitive processing therapy for veterans with PTSD related to military sexual trauma. *J Trauma Stress,* 26, 28-37.
- Tuerk PW, Yoder M, Grubaugh A, Myrick H, Hamner M, Acierno R. (2011). Prolonged exposure therapy for combat-related posttraumatic stress disorder: an examination of treatment effectiveness for veterans of the wars in Afghanistan and Iraq. *J Anxiety Disorders,* 25, 397-403.
- Vujanovic, A. A., Niles, B., Pietrefesa, A., Schmertz, S. K., & Potter, C. M. (2013). Mindfulness in the treatment of posttraumatic stress disorder among military veterans. Spirituality in Clinical Practice, 1, 15-25.