Effects of Mindfulness-Based Interventions on Symptoms Among Patients With Medically Unexplained Physical Symptoms

NADA LUKKAHATAI, PhD, MSN, RN[1]; JOHN DAVIS BARCELO, SN[2]; TEODORA NAYDENOVA, SN[2]

[1] SCHOOL OF NURSING, JOHNS HOPKINS UNIVERSITY; [2] SCHOOL OF NURSING, UNIVERSITY OF NEVADA, LAS VEGAS

Introduction

- Medically unexplained symptoms (MUS) is defined as inconsistent physical symptoms lasting for more than 3 months and cause the loss of function that have little or absence of obvious pathology, which include some recognizable syndromes (e.g., fibromyalgia, irritable bowel syndrome, chronic fatigue syndrome, and chronic low back pain).[1]
- The MUS condition is accounting for up to 20% of frequent primary health care visit, associated with significant increase in health care cost, admission and disability, high sickness absence and job loss,[2] and spent an average of up to 6,354 USD annually on the health care cost.[3]
- The current treatment for MUS include antidepressants and non-pharmacological interventions such as cognitive behavioral therapy (CBT), which show small to moderate effectiveness in managing these physical symptoms.[4]
- Mindfulness is defined as the quality of awareness or consciousness that emerges from intentionally attending to a non-judgmental and accepting present moment experience.[5] Unlike traditional CBT that focuses on encouraging patients to maintain and increase pleasant activities and change the dysfunctional thoughts, MBIs focus on awareness and acceptance of the present situation.
- Several meta analysis and systematic review investigate the effectiveness of MBIs on the mental health,[5] vascular disease,[6] addictive disorders,[7] cancer,[8] psychiatric disorders,[9] and healthy people.[10] No study has review the effectiveness of MBIs on MUPS.

Objective

This study aims systematically review the state of science on the effects of MBI on symptoms experienced by patients with MUPS.

Method

- A systematic review was conducted on the following databases PubMed, Web of Science, Scopus, EMBASE, and PsycINFO.
- Search terms include "mindfulness" or "meditation" and "medically unexplained symptoms" or "medically unexplained physical symptoms."
- The inclusion criteria of completed clinical trial study, participants age older than 19, "English" language were used.
- Studies in patients with psychological disorders, instrument development, and feasibility studies were excluded.
  - The Oxford quality scoring system (Jadad scale) was used for quality evaluation.
  - Studies were evaluated on
    - Randomization
    - Appropriateness of randomization generation
    - Adequacy of double-blind procedure
    - Description of the double-blind method
    - Participants exclusion and drop-out.
  - Studies with score of 3 or higher is consider high-quality with low risk of bias

Result

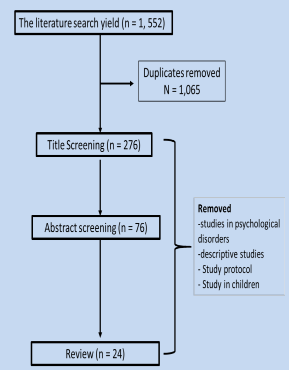

Figure 1: Literature search result

- Twenty four studies were selected. Nine studies were published within 2014-2016.
- Ten studies (42%) was done in the US.
- The majority studies investigated effects of MBI on symptoms in white women (%), diagnosed with irritable bowel syndrome (50%) with a mean age range from 32.0-54.4 year old.
- There is twenty face to face interventions and four online interventions.
- The majority of studies delivered the intervention in group of 4 to 8 people.
- The sessions were approximately two and a half to seven hours and about two to eight weeks each.
- Studies reported significant improvement of fatigue (3 of 4 studies) and depression (6 of 9 studies).
- Only 42% of studies showed significant improvement in pain (5 of 12 studies).

Table 1: summary of evidences

	Authors (year)	Disease	Age (mean +/-SD)	Gender n(%)	Intervention (duration)	Methods (face to face, online etc.,)	Type (group, individual)	Therapist	outcomes	Biological outcomes
1	Amutio, Franco, Perez-Fuentes Mde, Gazquez, & Mercader, 2014	Fibromyalgia	M = 51.82, SD= 10.18	32 Subjects (100% Female) experimental group (n=14) control group (n=18)	Mindfulness intervention (2 hours session, once a week for 7	Group, face to face		experienced instruction in mindfulness	improved depression up to 3 months	none
2	Astin, Berman, Bausell, Lee, Hochberg & Forys, 2003	Fibromyalgia	M=47.7, SD=10.6	28 Subjects(100% Female) no control group	mindfulness meditation and Qigong (2.5 hours, once a week for 8 weeks)	Group, face to face		N/A	Improved pain and depression	none
3	Cash et al., 2014	Fibromyalgia	N/A	90 Subjects (100% Female) experimental group (n=51), control group (n-=39)	MBSR (2.5-hour sesion, once a week for 8 weeks) + yoga and half-day meditation	Group, face to face		N/A	reduce stress and symptoms severity but not pain and physical function	Saliva cortisol (NS)
4	Davis & Zautra, 2013	Fibromyalgia	M=46.14	79 Subjects (98% Female) mindfulness group (n =39), health tip intervention group (n=40)	Mindful socioemotional regulation vs. Health tips intervention	Group, face to face		experienced trained MBSR instructor	improve social function, coping efficacy for pain and stress	none
5	Grossman, Tiefenthaler-Gilmer, Raysz, & Kesper, 2007	Fibromyalgia			MBSR (2.5-hour session, once a week for 8 week) + yoga and full day retreat	group, face to face		N/A	Control intervention showed greater improvement of symptoms immediately after the	none
6	Schmidt, Grossman, Schwarzer, Jena, Naumann, & Walach, 2010	Fibromyalgia	M=52.5 SD=9.6		MBSR vs. active control vs. wait list control	group, face to face		2 experience mindfulness trainers, who had both participated in an intensive 2-	No significant differences among group, HRQoL improved immediately after	none
7	Sephton, Salmon, Weissbecker, Ulmer, Floyd, Hooveer, & Studts, 2007	Fibromyalgia	M=48.2 SD=10.6	91 subjects (100% female) experimental group (n=51), control group (n=40)	MBSR (2.5-hour sesion, once a week for 8 weeks) + a day long retreat	group, face to face		a licensed clincial psychologist	improved in depression	none
8	Curtis, Osadchuk & Katz 2011	Fibromyalgia		22 subjects	8 week mindfulness and yoga intervention	group, face to face			improvement in pain and catastrophizing	Median of salivary cortisol significantly increase at post intervention
9	Berrill, Sadlier, Hood & Green, 2014	Inflammatory bowel disease	Intervention group M= 44.4, SD=11.7, Control group M=45.4, SD=10.6	Intervention group Male 8(24%), Female 25(76%) Control group Male 7(21%), Female 26(79%)	Multi-convergent therapy (include, mindfulness meditation)	Group, face to face		experience therapist	No significant differences on the symptom outcomes	none
10	Garland, Gaylord, Palsson, Faurot, Mann, & Whitehead, 2012	Irritable bowel syndrome	N/A	71 subjects (100% Female)	8 weeks Mindfulness training vs 8 weeks support group	group, face to face		Professional with MBSR experiences	Mindfulness group showed significant improvement of pain, and other symptoms	none
11	Gaylord, Palsson, Garland, Faurot, Coble, Mann, Frey, Leniek, & Whitehead, 2011	Irritable bowel syndrome	N/A	75 subjects (100% female)	Mindfulness intervention (8 week intervention + 1 half day intensive)	group, face to face		Experienced mindfulness instructor and licensed clinical social worker or	reductions in IBS symptoms severity immediately and 3-months follow up	none
12	Kearney, Mcdermott, Martinez. & Simpson, 2011	Irritable bowel syndrome	M=51, SD = 10.6	93 subjects	2 months MBSR training	Group, face to face		Instructor with MBSR experience	No significant improvement of symptom outcomes	none
13	Ljotsson et al., 2010b	irritable bowel syndrome	M =34.6, SD =9.4	86 subjects, intervention group (n=42), control group (n =43)	CBT based on exposure and mindfulness exercise	Internet based intervention		Graduate psychology and trained in CBT student	no significant improvement of symptoms but showed significant improvement of QoL	none
14	Ljotsson et al., 2010a	irritable bowel syndrome	M= 35.9 SD=8.9	49 subjects	Exposure and mindfulness based therapy (10 weeks intervention)	group, face to face		Trained psychiatrists	significant improvement of symptoms (41%-50% reduction)	none
15	Ljtsson et al., 2011	Irritable bowel syndrome		75 subjects	CBT based on exposure and mindfulness exercise	Internet based intervention			Long term ffollow up (15-18 month post intervention), result showed improvement of symptoms	none
16	Zernicke, Campbell, Blustein, Fung, Johnson, Bacon, & Carlson, 2012	Irritable bowel syndrome		90 subjects experimental group (n=43) and wait list control (n=47)	MBSR (90 mins session, once a week for 8 weeks) and 3 hours morning workshop	group, face to face		a trained registered nurses who was also a certified yoga instructor	MBSR group showed greater imrpovement of IBS symptoms compare the control group.	none
17	Zomorodi, Abdi, & Tabatabee, 2014	irritable bowel syndrome	M =32	24 IBS patients (12 in MBT group and 12 in CBT group) and 12 health subjects	CBT vs MBT	group, face to face			MBT is the most effective technique in decrease symptoms	none
18	Rimes, & Wingovrove, 2011	Chronic fatigue syndrome	M=43.3, SD = 10.15	Female 29 (82.8%) Male 6 (17%)	mindfulness program	group, face to face		professional instructors with MBSR experience	improvement in symptoms	none
19	Van Ravestejin, Lucassen, Bor, Weel, & Speckens, 2012	Medically unexplained symptoms	M=47.05, SD=11.5	Female 87(74.3%) Male 30 (25.6%)	Mindfulness-Based Cognitive Therapy	group, face to face		professional therapist	MBCT group report greater improvement in mental functioning	none
20	Banth & Ardenbil, 2015	Chronic low back pain		88 subjects	MBSR	group, face to face		trained professional	Improvement of pain was reported in the MBSR group	none
21	Braden, Pipe, Smith, Glaspy, Deatherage, & Baxter, 2016	Chronic low back pain		23 subjects, experimental group (n=12), control group (n=11)	MBSR (4 weeks intervention)	group, face to face		trained therapist	improvement in pain and depression	none
22	Cherkin et al., 2016	Chronic low back pain	M=49.3, SD = 12.3	342 subjects (116 in MBSR, 113 in CBT, 113 in usual care)	MBSR vs CBT vs Usual care	Face to face		trained therapist	MBSR group showed greatest improvement in symptoms	none
23	Cherkin et al. 2017	Chronic low back pain	M=49.3, SD = 12.3	276 subjects	MBSR vs CBT vs Usual care	Face to face		trained therapist	2 years follow up, MBSR group showed greatest improvement in symptoms among 3 groups	None
24	Kearney, Simpson, Malte, Feleman, Martinez & Hunt, 2016	Gulf War Illness		55 subjects	MBSR (2.5-hour sesion, once a week for 8 weeks) + a day long retreat	group, face to face		Trained therapist	reduction in pain, stress up to 6 months post intervention	none

Conclusion

- Most studies suggested that these improvements were not sustained.
- The most often limitations are the lack of randomization and lack of control group.
- Most studies suggested that these improvements were not sustained.
- The most often limitations are the lack of randomization and lack of control group.
- Evidence supports the benefits of MBIs on the symptoms experienced by patients with MUS.
- This intervention can be used as one of the alternative nursing intervention for patients suffering from pain, fatigue, and depression.
- Future studies should develop a durable MBIs for patients with MUPS.

References:

1. Nimmo, S. B. (2015). Medically unexplained symptoms. *Occup Med (Lond*), 65(2), 92-94. doi: 10.1093/occmed/kqv004
2. Haller, H., Cramer, H., Lauche, R., & Dobos, G. (2015). Somatoform disorders and medically unexplained symptoms in primary care. *Dtsch Arztebl Int*, 112(16), 279-287. doi: 10.3238/arztebl.2015.0279
3. Burton, C., McGorm, K., Richardson, G., Weller, D., & Sharpe, M. (2012). Healthcare costs incurred by patients repeatedly referred to secondary medical care with medically unexplained symptoms: a cost of illness study. *J Psychosom Res,* 72(3), 242-247. doi: 10.1016/j.jpsychores.2011.12.009
4. Bellato, E., Marini, E., Castoldi, F., Barbasetti, N., Mattei, L., Bonasia, D. E., & Blonna, D. (2012). Fibromyalgia syndrome: etiology, pathogenesis, diagnosis, and treatment. *Pain Res Treat*, 2012, 426130. doi: 10.1155/2012/426130
5. Gu, J., Strauss, C., Bond, R., & Cavanagh, K. (2015). How do mindfulness-based cognitive therapy and mindfulness-based stress reduction improve mental health and wellbeing? A systematic review and meta-analysis of mediation studies. *Clin Psychol Rev*, 37, 1-12. doi: 10.1016/j.cpr.2015.01.006
6. Abbott, R. A., Whear, R., Rodgers, L. R., Bethel, A., Thompson Coon, J., Kuyken, W., . . . Dickens, C. (2014). Effectiveness of mindfulness-based stress reduction and mindfulness based cognitive therapy in vascular disease: A systematic review and meta-analysis of randomised controlled trials. *J Psychosom Res*, 76(5), 341-351. doi: 10.1016/j.jpsychores.2014.02.012
7. Skanavi, S., Laqueille, X., & Aubin, H. J. (2011). [Mindfulness based interventions for addictive disorders: a review]. *Encephale,* 37(5), 379-387. doi: 10.1016/j.encep.2010.08.010
8. Matchim, Y., Armer, J. M., & Stewart, B. R. (2011). Mindfulness-based stress reduction among breast cancer survivors: a literature review and discussion. *Oncol Nurs Forum*, 38(2), E61-71. doi: 10.1188/11.ONF.E61-E71
9. Chiesa, A., & Serretti, A. (2011). Mindfulness based cognitive therapy for psychiatric disorders: a systematic review and meta-analysis. *Psychiatry Res,* 187(3), 441-453. doi: 10.1016/j.psychres.2010.08.011
10. Khoury, B., Sharma, M., Rush, S. E., & Fournier, C. (2015). Mindfulness-based stress reduction for healthy individuals: A meta-analysis. *J Psychosom Res*, 78(6), 519-528. doi: 10.1016/j.jpsychores.2015.03.009

JOHNS HOPKINS
SCHOOL *of* NURSING