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ORIGINAL PAPER

For Whom May Participation in a Mindfulness-Based Stress Reduction Program be Contraindicated?

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Abstract Mindfulness-Based Stress Reduction (MBSR) programs are offered worldwide. To date, there has been little discussion about for whom participation may not be appropriate. We reviewed the literature pertaining to attrition and adverse effects following participation in MBSR; relatively little was learned in this search. A few clinical trials from Mindfulness-Based Cognitive Therapy (MBCT) provide ideas concerning who may not benefit from this program and who is likely to drop out. There are some case studies of individuals who manifested various mental health issues following experiences with various forms of meditation, but often specifics are missing such that it is not known what type of meditation was practiced or if the individuals in question had previous psychiatric disorders or preexisting conditions that could predispose them to negative outcomes. While we could not provide an empirically based answer to our question, we open the discussion and offer recommendations, especially with regard to preprogram screening, to guide instructors when they form a new group for an MBSR course so that the risk of harm is reduced. We trust that this paper will prompt our colleagues to examine the issue of risk and report adverse events should they occur.

Keywords Mindfulness-Based Stress Reduction · Attrition · Adverse effects

Introduction

The Mindfulness-Based Stress Reduction (MBSR) program developed by Kabat-Zinn (1990) and his colleagues at the University of Massachusetts Medical Centre three decades ago has become a popular means of helping people cope with the stress inherent in their lives. This 8-week structured program teaches participants how to face life's challenges through various means: meditation, yoga, inquiry, and dialogue with group members. More and more studies that include various populations point to positive outcomes (Matchim and Armer 2007; Rosenzweig et al. 2003; Rosenzweig et al. 2010; Shapiro et al. 2005); however, this program may not be appropriate for—or appealing to—all. Importantly, do we know for whom participation may possibly be a risk? How can we determine who should or should not partake in 8 weeks of training in mindfulness meditation? To our knowledge, these questions have not been formally addressed in the growing literature pertaining to mindfulness-based therapies such as MBSR.

These questions are pertinent when one considers the populations most likely to enroll in an MBSR program. Due to medical illness, some individuals are referred by physicians. Since patients with chronic illness may have comorbid disorders, it would be important to identify

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problems that may make participation difficult (e.g., inability to concentrate when clinically depressed). Others come because their lives are troubled, perhaps due to transitions such as divorce, retirement, or other major life stressors. They, too, may harbor a certain degree of vulnerability (e.g., individuals with a history of trauma or substance abuse). Further, providing MBSR to certain 'high functioning' groups, such as university or medical students, may carry risks given that such time periods often coincide with the age of onset for mental health issues (e.g., bipolar or eating disorders) as well as significant life transitions (e.g., medical student to resident). When health care professionals take the course, their aims may be different (e.g., balance work and home lives), but they may nonetheless present with burnout or distress. As more and more individuals self-refer to MBSR programs via the Internet, the instructor may have little or no information pertaining to the person's health status unless he or she has a policy to interview potential participants.

"Do no harm" is the guiding precept for health care professionals. The definition of "harm" is key in this context, particularly as the distinction between physical, mental and emotional pain or distress merges in such programs as MBSR (i.e., one could have chronic pain or an incurable illness, but reach a place of acceptance and calm; or perhaps a deeper emotional pain may be experienced for the first time). As well, the definition of "harm" can be open to interpretation, depending on the capacity of both the participant and the instructor to remain present to their experience. In this context, the individual's perception of the experience and the instructor's skill in perceiving what is going on at multiple levels are crucial (e.g., if an instructor allows a participant to remain with his pain in order to gain some insight, or perhaps encourages a participant to not 'push' himself so hard, yet never allows him to move through an experience—then is 'harm' being done?).

Harm occurs inadvertently sometimes through lack of knowledge or experience, human error, and more rarely negligence. When clinical trials are carried out, especially in the early phases of treatment development, attention is paid to safety and potential adverse effects. In medical research, trials progress from Phase I to IV to ensure that patients are offered what they are most likely to benefit from with equipoise. Ideally, it is clear for whom the treatment is suited, but given that evidence is based on carefully controlled studies, sometimes one cannot know if it is the optimal choice for a particular patient. The MBSR program has not progressed through this process for all the types of problems and diagnoses for which individuals seek assistance. Apparently, adverse events are not systematically monitored or reported.

MBSR was developed as a means to help patients with chronic pain and other illnesses cope with their symptoms and distress. Patients were 'screened' by virtue of being referred by their physicians. While the early literature does not address harm per se, in 1988, Kabat-Zinn and Chapman-Waldrop (1988) noted that patients with chronic pain were *less* likely to complete the MBSR program compared to patients with stress-related disorders (e.g., hypertension, insomnia, and anxiety with somatic complaints). Moreover, men with chronic pain were more than twice as likely as women to drop out. For patients with stress-related disorders, those with higher obsessive–compulsive scores were *more* likely to stay in the program. A decade later, in a discussion of intervention elements promoting adherence to MBSR, Salmon et al. (1998) indicated that those who dropped out did so early (within the first three classes); reasons being: time demands of the course and practice, discomfort with large groups, or simply that the approach did not suit them. Lynch (2004) also found that when women with fibromyalgia (a chronic pain syndrome) dropped out, they did so early on. Furthermore, emotional role-functioning predicted attendance: those with lower scores (i.e., more emotional reactivity) came to fewer classes. In an earlier study of women with fibromyalgia, Kaplan et al. (1993) reported that 23% dropped out before the third class. This seems to be a common finding: participants, who drop out do so early on. More recently, Carmody and Baer (2008) failed to identify significant sociodemographic or baseline measures (e.g., stress and number of medical symptoms) that distinguished those who completed the MBSR program at the University of Massachusetts Medical School from those who did not. With regard to differences in patient characteristics or other types of group heterogeneity (e.g., mixed diagnoses and mother tongue, i.e., English and French), in our experience, this did not seem to contribute to not completing the course.

Crane and Williams (2010) identified factors associated with attrition form Mindfulness-Based Cognitive Therapy (MBCT), a modified version of MBSR designed for patients with recurrent depression who were in remission. In several studies, dropouts from MBCT had a history of two, rather than three or more episodes of depression as well as a history of attempted suicide. A logistic regression analyses identified brooding and cognitive reactivity as predictors of dropout. While this program is not equivalent to MBSR (the structure is comparable but it has differences such as less intensive yoga practice, inclusion of didactics on depressive

symptoms and relapse), these findings may inform us with regard to who may have difficulty dealing with 'material' that can arise while meditating. These authors recommended careful screening prior to course entry to assess emotional role functioning. If problematic, they suggested preparing the person to increase motivation and perseverance should difficulties arise.

While attrition may be due to a multitude of factors (e.g., conflicting time demands and discomfort working in groups), another way to approach the question for whom MBSR should not be recommended is to examine reports of adverse events. In our search, we found publications pertaining to the practice of meditation rather than participation in an MBSR program per se. Even when reading 'the fine print', we did not find reports of adverse events in the MBSR literature. Given that meditation is one among other components of an MBSR program, we acknowledge that this way of examining the issue is indirect. Nonetheless, Manocha (2000) states that meditation is contraindicated in those suffering from psychosis and should be proposed with caution for patients with severe psychological problems, but he does not indicate which disorders or why. Two decades ago, Shapiro (1992) studied 27 'long-term meditators' (mean years of meditation=4.27 years) and found that 62.9% reported at least one adverse event during and after meditation and that 7.4% suffered profound adverse effects. The nature of these effects were: relaxation-induced anxiety and panic, paradoxical increases in tension, less motivation in life, boredom, pain, impaired reality testing, confusion and disorientation, feeling 'spaced out', depression, increased negativity, being more judgmental and feeling 'addicted to meditation.' Perez-de-Albeniz and Holmes (2000) cite early work from the 1980s describing other negative effects such as: uncomfortable kinesthetic sensations, mild dissociation, grandiosity, feelings of 'defenselessness' and guilt. They summarized these effects as being consistent with the neurotic/anxiety constellation of symptoms. Yet, no attempt was made to determine preexisting conditions. Other case studies describe psychiatric problems following meditation practice. Yorston (2001), for example, details how mania (diagnosed as a bipolar affective disorder) was precipitated by meditation in a 25-year-old woman with no apparent previous psychiatric history. Kuijpers et al. (2007) review early case studies (including a table with ten case reports from 1975 to 2003) on transient meditation-induced psychosis. Duration of adverse effects varied from 2 days to 5 months of an 'oscillating state'; most patients had previous psychiatric histories (e.g., acute psychotic episodes and schizoid personality disorder). Little is known with regard to the type of meditation (Transcendental Meditation, Zen, Vipassana, and Qi-Gong), duration of practice, or the context (e.g., silent retreat experience) that may have influenced these reactions. It appears that these events are relatively uncommon but we cannot be sure. It is also unclear if the effects of meditation practices alone can be compared directly with meditation practices in the context of an MBSR or MBCT course. In the MBSR group, dialogue is encouraged among the participants; this can assist and support individuals when they are experiencing unpleasant sensations (e.g., numbness in the limbs) or the emergence of negative emotions (e.g., anger).

Germer (2005), in his chapter Teaching Mindfulness in Therapy, provides some signposts with regard to the possibility of adverse events. While not in the context of a MBSR program, he addresses the concerns we have raised here. For instance, for patients who have experienced trauma, he makes suggestions with regard to when and how to introduce meditation as part of individual psychotherapy. He points out the importance of a patient's ego strength or emotional resilience. He is clear that patients who "decompensate when cognitive controls are loosened should generally not do formal sitting meditation" (p. 128). Moreover, he indicates that persons with "fragile personalities" may benefit from learning meditation but that the duration of practice should be shortened. These caveats are seen in other writings as well. Didonna (2009), in a chapter on mindfulness and obsessive–compulsive disorder purports that meditation may be contraindicated for this patient group; one must rely on "clinical experience" to determine this. In the same text (Clinical Handbook of Mindfulness), Didonna and Gonzalez (2009) state that mindfulness-based interventions with patients suffering from pathological "feelings of emptiness" (e.g., in the context of eating disorders, posttraumatic stress disorder, and schizophrenia) should be working with an "expert therapist" (p. 143) since intense reactions (e.g., dissociation, panic, or the need to escape) can occur. Nonetheless, Chadwick (2005) conducted a pilot study with ten patients with psychosis and reported positive initial outcomes.

While we focus on patient characteristics when attempting to answer our main question herein, Crane et al. (2010), in their excellent discussion of training teachers to deliver mindfulness-based interventions, call to mind another important variable to consider, namely teacher competence. Perhaps patients leave if they are taught by a person who cannot embody the practice in a way that enhances patients' experience of mindfulness. Potentially, patients may be harmed if reactions are not

handled skillfully. This brings to mind one experience we had when teaching Mindfulness-Based Medical Practice (MBMP). One participant began to cry uncontrollably during class; one instructor worked directly with her to address her wish to flee, while the other instructor simultaneously led the rest of the group in exploring their 'impulse to help/fix' the colleague in distress. Irving et al. (2011) in a qualitative study of an MBMP program for health care professionals describe how this rather dramatic event became a teaching moment for all in the class. As stated by the Melbourne Academic Mindfulness Interest Group (2006), short-term negative experiences can be a transient part of the process, and "the skill of the instructor in dealing with such eventualities may be important in determining whether they become valuable learning opportunities or, alternatively, adverse events" (p. 290).

We at McGill University Programs in Whole Person Care, have been offering MBSR and MBMP to patients with chronic illness, health care professionals, and medical students, respectively for the past 5 years. Our attrition rate is very low (about 5%) and our positive results (Dobkin and Zhao 2011; Irving et al. 2011; Matousek and Dobkin 2010) are similar to what is found in the literature. While most participants show benefit, some report increases in perceived stress or scores over the cut-point on a screen for depression at the end of the program (24% for depressive symptoms—unpublished data). While we cannot attribute these negative outcomes to their participation as such, we listened to participants in the postMBSR/MBMP interviews to gain some insight into this phenomenon. People described increased awareness of positive and negative aspects of their lives. When 'mindful', one is less likely to avoid unpleasant emotions or interpersonal problems. This may require adjustment and integration before the person is comfortable 'staying with' what arises. Some spoke of significant changes they made after the program, such as leaving a stressful job or unhappy marriage, being more assertive with family members or colleagues. Similar to psychotherapy, issues may be 'stirred up' and circumstances may be experienced as worse before they settle and get better. Other participants gained insight into reactive patterns that had dominated their lives for years and triggered symptoms. This was sometimes upsetting. Naturally, it may take more than 8 weeks to come to terms with what one learned and experienced during an MBSR program, particularly when critical issues become evident.

What is meant by the terms 'side effects' or 'adverse outcomes'? 'Harm', for one, may be 'a dark night of the soul' for another (Cohen and Phipps 1992). Meditation, when practiced intently, leads one into deep exploration of 'inner space.' Long-held grief, body tension, and critical or judgmental thoughts may be met perhaps for the first time with full attention. As such, tolerance needs to develop for such 'unpleasant material.' While practitioners are taught to reframe such thoughts and feelings as 'mind events', the capacity for 'disidentification' takes time to manifest. During the requisite silent retreat day, participants are faced with few external distractions—one is alone with oneself in silence hour after hour. For some, this is a turning point in the MBSR program, depending on each individual's capacity to stay with the material arising and to integrate that (or not) as part of their current experience. During our debriefing following the retreat day, some participants reported feeling exhausted or disoriented. Others were better able to sit still for longer periods of time afterwards. In class seven of our course, following the retreat, we address directly the possibility of increased stress or distress and process it with the class members for this reason.

Discussion

While we cannot not answer the question empirically, "For whom is MBSR contraindicated?", we open further discussion for those who offer this program. This may be especially important if instructors are not health care professionals or adequately trained (Crane et al. 2010). As MBSR becomes more 'mainstream', one must ensure that the instructors are adequately prepared to assist individuals who encounter serious difficulties (e.g., panic attacks and increases in pain) during or after the program. It is noteworthy that the Center for Mindfulness in Medicine, Health Care, and Society wrote a manual entitled, "Issues in the Administration of an MBSR program" (Center for the Mindfulness in Medicine 2006). Therein, specified are the qualifications of interviewers and instructors (master's level in an appropriate discipline, plus specific amounts of meditation experience) and the process used to accept people into the program. Relevant to our discussion, they indicate that prior to program entry, interviewers should assess the patient's ability to: (1) contain affect; (2) listen and respond in the present; (3) utilize instructional audio tapes and follow classroom instruction; (4) remain in the classroom; (5) practice yoga or equivalent; and (6) organize thoughts, manage logistics, and time commitment. Moreover, it is specified that it is the instructor's responsibility to monitor attendance and contact class

members should they not attend a given class in the event of a medical problem or a serious psychological reaction.

Thus, we conclude this commentary with a number of suggestions. First, screening potential participants for psychiatric problems, addictions, and posttraumatic stress disorder may need to become 'standard practice', particularly as referrals increasingly come through the Internet, a channel which may circumvent prior screening from health care professionals. In the "Appendix", we provide a sample of one such interview. In our work, before the instructor meets with potential participants, individuals are asked to complete online testing; the results are sent to the interviewer prior to the interview. The form we use guides the interviewer and is based on clinical experience. When an individual indicates that she or he has experienced previous trauma, the interviewer probes further to determine if it may interfere with program participation. If the individual's depression score is high, the interviewer determines if she or he is currently under care or is using medications. We do not accept into our program anyone who is currently abusing alcohol or drugs. To date, very few people have not been offered MBSR following our interview.

Second, for those with psychopathology (e.g., generalized anxiety disorder), ensuring that they are being treated appropriately by a qualified practitioner is recommended, given that MBSR is not a form of group psychotherapy nor a peer support group. Whether or not the person can and should attend the course is determined on a case-by-case basis (S. Santorelli, personal communication, September 20, 2006).The decision then rests on clinical judgment for lack of empirically based guidelines. Instructors may also consider that other empirically supported mindfulness-based interventions may be more appropriate, for example, MBCT for recurrent depression, Dialectical Behavior Therapy for borderline personality disorder, and Acceptance and Commitment Therapy for obsessive–compulsive disorder (Chiesa and Malinowski 2011).

Third, people can be 'primed' with regard to the type of commitment needed and informed about what to expect vis-à-vis types of practice and 'homework.' This idea is elaborated upon in Crane and Williams (2010) for those who are "cognitively reactive." For example, they suggest informing the person that early practices may be challenging and providing strategies regarding how to respond when disconcerting emotions arise (e.g., techniques for stabilizing the body and mind through breath awareness).

Fourth, a referral system should be in place in case a participant experiences the types of problems described in the psychiatric literature. As well, the importance of an instructor well-versed and trained not only in the basic mindfulness techniques, but also knowledgeable about the available community resources surrounding these practices must be emphasized. Such instructors would be able to offer the required support both during and posttraining by guiding participants towards reputable resources or referring to qualified mediation teachers or communities (e.g. meditation centers, established practice groups, etc.) that could both guide and support an individual in their process.

Finally, during the program we emphasize that participants know best what they need and when a particular type of practice (e.g., yoga) will or will not suit their current situation (e.g., morning stiffness with arthritis). This approach recognizes that people are responsible for their own well-being, both in the present moment and in the long-term. They are encouraged to discern for themselves what may be harmful and to desist from engaging in any activity that would not be in their best interest. When in doubt, they can speak with the instructor individually. Ultimately, restoring this power of choice to each person can be beneficial in and of itself. Whether in the context of MBSR or not, one must remember that the individual is the primary focus, not the practice, the program nor the methodology. How one practices and approaches practice is also a factor in mitigating harm and encouraging overall health and well-being. Even the 'best' practices can be harmful if not done mindfully, whether by participants themselves or by the instructor.

These five suggestions are meant to circumvent the possibility of harm. Clearly, when people take an MBSR program they have initial goals, such as to: deal more effectively with stress, reduce anxiety, improve sleep, or cope with pain—i.e., they hope to diminish suffering. It is our intention to facilitate that process as much as possible and provide a safe environment for all who are in the group. We trust that this paper will prompt our colleagues to examine the issue of risk and report adverse events should they occur.

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Appendix A

PRE-MBSR INTERVIEW

Date of Interview_____

Name of Interviewer_____

Name of Participant_____

1. How did you find out about our program?

2. Have you taken workshops previously that involved groups?
   If yes, could you describe the experience?

3. Screen for trauma: Have you ever experienced trauma in your life?
   - intrusiveness
   - avoidance
   - body arousal

4. Screen for alcohol/substance abuse.

5. Have you ever been treated for a mental health problem?

Interviewer looks at the questionnaire scores and probes only if there is an indication for concern.

Describe the program, explain the expectations and time commitment.

What is your intention for taking MBSR?
Please identify 3 goals.

1_____

2_____

3_____

References

Carmody, J., & Baer, R. A. (2008). Relationships between mindfulness practice and levels of mindfulness, medical and psychological symptoms and well-being in a mindfulness-based stress reduction program. *Journal of Behavioral Medicine, 31*, 23–33.

Center for the Mindfulness in Medicine. (2006). Issues in the administration of a mindfulness-based stress reduction program 2006. Unpublished Manual, University of Massachusetts Worcester

Chadwick, P., Taylor, K. N., & Abba, N. (2005). Mindfulness groups for people with psychosis. *Behavioural and Cognitive Psychotherapy, 33*, 351–359.

Chiesa, A., & Malinowski, P. (2011). Mindfulness-based approaches: Are they all the same? *Journal of Clinical Psychology, 67*, 404–424.

Cohen, J. M., & Phipps, J. F. (1992). *The common experience: Signposts on the path to enlightenment* (1st ed.). Illinois: Quest Books.

Crane, C., & Williams, J. M. (2010). Factors associated with attrition from mindfulness-based cognitive therapy in patients with a history of suicidal depression. *Mindfulness, 1*, 10–20.

Crane, R. S., Kuyken, W., Hastings, R. P., Rothwell, N., & Williams, J. M. G. (2010). Training teachers to deliver mindfulness-based interventions: Learning from the UK experience. *Mindfulness, 1*, 74–86.

Didonna, F. (2009). Mindfulness and obsessive–compulsive disorder. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 189–220). New York: Springer Publishing.

Didonna, F., & Gonzalez, Y. R. (2009). Mindfulness and feelings of emptiness. In F. Didonna (Ed.), *Clinical handbook of mindfulness* (pp. 125–152). New York: Springer Publishing.

Dobkin, P. L., & Zhao, Q. (2011). Increased mindfulness—The active component of the mindfulness-based stress reduction program? *Complementary Therapies in Clinical Practice, 17*, 22–27.

Germer, C. K. (2005). Teaching mindfulness in therapy. In C. K. Germer, R. D. Siegel, & P. R. Fulton (Eds.), *Mindfulness and psychotherapy* (pp. 113–129). New York: Guilford Press.

Irving, J.A., Park, J., Fitzpatrick, M., Dobkin, P. L., Chen, A., & Hutchinson, T. (2011). Experiences of healthcare professionals enrolled in mindfulness-based medical practice: A grounded theory model. Unpublished Manuscript

Irving, J.A., Dobkin, P. L., Park, J., Fitzpatrick, M., & Hutchinson, T. (2011). Mindfulness-based medical practice: Understanding the link between mindfulness and wellness in healthcare professionals. Unpublished Manuscript

Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain and illness*. New York: Delacorte Press.

Kabat-Zinn, J., & Chapman-Waldrop, A. (1988). Compliance with an outpatient stress reduction program: Rates and predictors of program completion. *Journal of Behavioral Medicine, 11*, 333–352.

Kaplan, K. H., Goldenberg, D. L., & Galvin-Nadeau, M. (1993). The impact of a MBSR program on fibromyalgia. *General Hospital Psychiatry, 15*, 284–289.

Kuijpers, H. J., van der Heijden, F. M., Tuinier, S., & Verhoeven, W. M. (2007). Meditation-induced psychosis. *Psychopathology, 40*, 461–464.

Lynch, G. V. (2004). Patient variables associated with treatment completion in a mindfulness meditation-based stress reduction (MBSR) treatment for fibromyalgia: implications for prescriptive matching and participation enhancement. Unpublished doctoral dissertation, University of Louisville, Kentucky, U.S.A.

Manocha, R. (2000). Why meditation? *Australian Family Physician, 29*, 1135–1138.

Matchim, Y., & Armer, J. M. (2007). Measuring the psychological impact of mindfulness meditation on health among patients with cancer: A literature review. *Oncology Nursing Forum, 34*, 1059–1066.

Matousek, R. H., & Dobkin, P. L. (2010). Weathering storms: A cohort study of how participation in a mindfulness-based stress reduction program benefits women after breast cancer treatment. *Current Oncology, 17*, 62–70.

Perez-De-Albeniz, A., & Holmes, J. (2000). Meditation: Concepts, effects and uses in therapy. *International Journal of Psychotherapy, 5*, 49–58.

Rosenzweig, S., Reibel, D. K., Greeson, J. M., Brainard, G. C., & Hojat, M. (2003). Mindfulness-based stress reduction lowers psychological distress in medical students. *Teaching and Learning in Medicine, 15*, 88–92.

Rosenzweig, S., Greeson, J. M., Reibel, D. K., Green, J. S., Jasser, S. A., & Beasley, E. (2010). Mindfulness-based stress reduction for chronic pain conditions: Variation in treatment outcomes and role of home meditation practice. *Journal of Psychosomatic Research, 68*, 29–36.

Salmon, P. G., Santorelli, S. F., Kabat-Zinn, J., Shumaker, S. A., Schron, E. B., Ockene, J. K., et al. (1998). Intervention elements promoting adherence to mindfulness-based stress reduction programs in the clinical behavioral medicine setting. In *The handbook of health behavior change* (2nd ed., pp. 239–266). New York: Springer.

Shapiro, D. H., Jr. (1992). Adverse effects of meditation: A preliminary investigation of long-term meditators. *International Journal of Psychosomatics, 39*, 62–67.

Shapiro, S. L., Astin, J. A., Bishop, S. R., & Cordova, M. (2005). Mindfulness-based stress reduction for health care professionals: Results from a randomized trial. *International Journal of Stress Management, 12*, 164–176.

Yorston, G. A. (2001). Mania precipitated by meditation: A case report and literature review. *Mental Health, Religion and Culture, 4*, 209–213.