

The effects of 8-week mindfulness meditation training on participants stress levels: a literature review

Barbora Kvapilová

Abstract

In recent decades, mindfulness meditation has gained a lot of interest from the ranks of psychologists, psychiatrists and educators based on beneficial effects on stress reduction, improved emotion-regulation and overall psychological well-being. Numerous studies have shown such positive effects, most of them relying on participants self-reported questionnaires before and after the training in mindfulness meditation. Most common form of mindfulness-based interventions (MBIs) are the Mindfulness-based stress reduction program (MBSR) working with all types of populations and the Mindfulness-based cognitive therapy (MBCT), targeting mainly clinical populations of patients with psychiatric diagnosis (i. e. depression, anxiety, panic attacks). On the other side of the research, a growing body of literature through meta-analyses points out to weak and flawed methodological designs of studies using the MBIs that could lead to biased findings. This literature review aims to describe recent studies that show positive effects of MBIs and also describe the methodological shortcomings and gaps to offer possible solutions for improved methodological designs of studies focusing on mindfulness-based interventions. This literature review inclusion criteria were as following: search of meta-analysis and systematic review studies on the MBIs from the past five years (2017–2022), quantitative research studies between years 2012–2022, studies published in English with focus consistent with the purpose of this literature review. Relevant research studies were searched for in the ProQuest Psychology Database,

PsycARTICLES, and PsycINFO databases offered by Palacký University through online access to databases.

Keywords: mindfulness meditation, mindfulness-based interventions (MBIs), stress, psychological well-being.

Účinky osmitýdenního tréninku meditace všímavosti na úroveň stresu účastníků: přehled literatury

Abstrakt

Mindfulness meditace neboli meditace všímavosti získala za poslední desetiletí náležitý zájem z řad psychologů, psychiatrů a pedagogů, zejména díky pozitivním účinkům na zmírnění stresu, seberegulaci emocí a zlepšením celkového psychického zdraví. Velké množství studií tyto účinky potvrdilo, většina z nich na základě vyplněných dotazníků účastníků před a po absolvování tréninku v mindfulness meditaci. Nejrozšířenější forma intervence založená na mindfulness meditaci je tzv. MBSR, Mindfulness meditace pro zmírnění stresu, která pracuje s různými cílovými skupinami, včetně normální populace. Druhá nejrozšířenější forma, tzv. MBCT, Mindfulness meditace v kognitivní terapii se soustřeďuje zejména na klinické populace lidí s psychiatrickou diagnózou (deprese, úzkostná porucha, panické ataky). Na druhé straně existuje spousta studií, které se formou meta-analýz zabývaly různými typy intervencí na základě mindfulness meditace, a které objevily nedostatečný či chybný metodologický design, na základě kterého mohlo dojít v těchto studiích ke zkresleným výsledkům. Tato studie literárního přehledu si klade za cíl popsat nejnovější studie, které potvrdily pozitivní účinky mindfulness meditace a zároveň popsat metodologické nedostatky a chybná nastavení tak, abychom poukázali na možná řešení a vylepšení metodologického designu studií využívajících intervencí založených na mindfulness meditaci. Kritéria pro zařazení studií do tohoto literárního přehledu jsou následující: studie typu meta-analýzy a systematického přehledu zaměřených na intervence založených na mindfulness meditaci za posledních 5 let (2017–2022), dále studie s kvantitativním výzkumem (2012–2022), publikované v anglickém jazyce a tematicky shodné s tímto literárním přehledem. V online databázích ProQuest Psychology, PsycARTICLES a PsycINFO Univerzity Palackého byly vyhledány relevantní studie pro účely tohoto literárního přehledu.

Klíčová slova: mindfulness meditace, meditace všímavosti, intervence založené na mindfulness meditaci, stres, psychické zdraví.

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Introduction

Over the past three decades, mindfulness meditation and mindfulness-based interventions (MBIs) have been studied extensively to find possible beneficial effects on stress reduction and overall improvement in psychological well-being (Kabat-Zinn, 2013; Baer, 2015). Many studies have proven time and again the desired benefits, ranging from stress, depression and anxiety reduction to better emotion regulation and more positive outlook on oneself, others, and one's life (Baer, 2015; Feldman & Kuyken, 2011). Along the optimistic results grew a large body of studies – meta-analyses – that pointed out to methodologically weak and flawed study designs mostly without randomized, controlled trials (RCT) (Dunning et al, 2019). The aim of this literature review is to describe, analyze and synthesize the most recent and relevant studies investigating the effects of MBIs on participants levels of perceived stress, and overall improvement in mental health in the past decade. This literature review considers the existing methodological shortcomings, gaps and flaws, and critically discusses possible solutions to improve the methodological design within the area of investigation of effects of mindfulness-based interventions. This literature review study was conducted by means of document analysis technique, specifically primary sources of texts. Relevant research studies were searched for in the ProQuest Psychology Database, PsycARTICLES, and PsycINFO databases offered by Palacký University through online access to databases.

1 Mindfulness meditation and mindfulness-based intervention programs

Mindfulness meditation training teaches participants to direct attention to the present moment, on purpose, and non-judgementally (Kabat-Zinn, 2013). Studies have proven that regular training of focusing on momentary experience of the present moment in a manner of acceptance while practicing non-judgemental approach can improve mental and physical health (Kabat-Zinn, 2013; Neff & Germer, 2013). Although mindfulness meditation has its roots in Buddhist philosophy, it has been adapted and transformed into a secular mindfulness-based intervention program, first introduced in 1979, by Jon Kabat-Zinn, the founder of the Mindfulness-based stress reduction program (MBSR) at the University of Massachusetts Medical center. MBSR was first introduced as a form of psychological and psychosomatic intervention for individuals suffering from chronic pain, disease, illnesses and stress (Kabat-Zinn, 2013). The MBSR program quickly gained its popularity and soon caught attention of many researchers in the field of psychology, psychosomatic medicine, and spread to various areas, including education (Kabat-Zinn, 2013; Crane et al., 2010). Since then, various forms of MBI programs

have been developed and thousands of instructors have been trained to deliver the mindfulness-based intervention programs to different target populations (Crane et al., 2012; Santorelli et al., 2017). Among them, the most effective and clinically accepted as a form of psychotherapeutic intervention is the mindfulness-based cognitive therapy (MBCT) (Teasdale et al., 2003; Teasdale et al., 2002). MBSR programs have addressed various populations, ranging from healthy populations of adults (Khoury et al., 2015) through children and adolescents (Dunning et al., 2019) to clinical populations of individuals with psychiatric diagnosis. The MBCT focuses more on clinical populations diagnosed with depression, especially individuals prone to depression relapse; anxiety disorders, or people with addictions (Teasdale et al., 2002; Williams, 2008). Both programs of MBSR and MBCT use mindfulness meditation as the foundation of their intervention to further develop the skills of mindful awareness, non-reactive attitude toward one's present experience and the philosophy behind it (Dimidjian & Segal, 2015, Teasdale & Chaskalson, 2011). The great expansion of use of mindfulness meditation in a variety of settings, including medicine, healthcare, psychological counselling and psychotherapy (Goldberg et al., 2018; Elices et al., 2022), education and business (Bartlett et al., 2019; Harp et al., 2022) seems to respond in large to global cries for help and transformation of human suffering within societies filled with poverty, racism, all forms of discrimination and other social injustices (Kabat-Zinn, 2019). Thus, the main goal of mindfulness meditation is to provide human beings with the possibility of cultivating a present moment awareness, systematically befriending one's own mind, body and unfolding of one's life with the attitude of kindness, compassion and nonjudgemental attitude (Kabat-Zinn, 2019). As Victor Emanuel Frankl, the founder of the logotherapy once said: *"Between stimulus and response, there is a space. In that space is our power to choose our response. In our response lies our growth and our happiness"* (Crane et al., 2012). His words perfectly describe what mindfulness meditation explores.

2 Positive effects of MBIs on stress reduction

In one recent study by Harp et al. (2022), authors studied appraisals in emotional ambiguity in participants undergoing the eight-week MBIs by showing them pictures of faces with relatively clear, either angry or happy expressions, and pictures of faces with ambiguous valence (surprised). The participants ratings became more positive for the ambiguous (surprised) pictures of faces from week 1 of the mindfulness training to end of the training (after 8 weeks). The interesting result was that shift toward positivity stayed after additional 8-week follow-up ratings (16 week). This finding indicates that mindfulness promotes a relatively long-lasting shift toward positivity bias (Harp et al., 2022). The authors chose to use valence bias as a particularly sensitive measure because it clearly shows the kind of emotional lens through which one sees the world.

That, in turn, has a powerful impact on decision-making, social interactions, and overall psychological well-being (Harp et al., 2022). Reported psychological well-being after 8 weeks of MBSR training points out to cognitive, emotional, and behavioral flexibility as underlying mechanisms of these beneficial effects (Harp et al., 2022).

Furthermore, in the meta-analysis by Zoogman et al. (2014), findings repeatedly support the notion of the MBIs as more beneficial to clinical populations than to non-clinical ones and point out to the fact that MBIs directly increased mindfulness and attention of the participants (Zoogman et al, 2014). Another systematic review and meta-analysis by Goldberg et al. (2018) confirmed there is an empirical basis for MBIs and the efficacy of mindfulness-based interventions mainly for treatments of depression, chronic pain management, addictive disorders, and smoking. Their findings support the concept of MBIs as one of the treatment options for clinical populations suffering from affective and addictive disorders as the first line of psychological treatments along with the evidence-based treatments or pharmacotherapies out there (Goldberg et al., 2018). The promising findings of randomized controlled trials (RCTs) on the efficacy of MBCT on depression relapse prevention (Kyuken et al, 2016; McCartney et al, 2021) led to the establishment of the MBCT by the UK National Institute of Health as the first line of effective psychological treatment option along with treatment as usual (TAU) in Great Britain (Elices et al., 2022). As mentioned earlier in the text, the MBIs are offered in a wide range of settings, workplace or corporate settings included. One systematic review and meta-analysis studied mindfulness-based programs and trainings to help people or employees with stress management, possible burnout prevention aiming to improve their psychological well-being and overall job performance. Even though mindfulness-based programs in workplace settings often vary in the format and delivery and often do not follow the same training protocols, they all try to teach participants the same set of skills; that is to focus on the present moment experience, develop mindful awareness of what is happening now with a kind, accepting and non-judgemental attitude. Lastly, they teach participants to change their perspectives on negative emotional experiences, thoughts, or circumstances. The results from this meta-analysis found moderate reduction on the dimension of perceived stress at post intervention. That showed up as a consistent measurement across the analyzed studies (Bartlett et al., 2019). Based on the obvious benefits why do critical voices arise from the community of researchers warning the rest of the world (scientific community as well as lay public) not to get overly excited about the positive study results making of mindfulness the panacea to all human problems and suffering?

3 The methodological flaws of studies with MBIs

There are several aspects that warn mindfulness researchers of flaws, biases and weaknesses that might falsely influence the scientific findings of MBIs efficacy for general and clinical populations. For the purpose and scope of this work, we will look at only a small but not less significant number of them. Namely, the lack of sufficient number of studies following the MBIs „graduates“ from a long-term perspective (i. e. one-year follow-up). Secondly, a heavy reliance on self-reported questionnaires as the only measure of comparison of the pre- and post-intervention data. Finally, a one-weak methodological designs of the mindfulness-based interventions studies often do not use randomized controlled trials (RCTs) as the golden methodological standard, and often employ disparate MBI designs and training protocols. Moreover, an exaggerated focus on applying MBIs on many different target population groups ranging from healthy individuals to individuals suffering from various mental disorders and physical illnesses without sufficient basic research to correctly identify MBIs as the right treatment or intervention option (Dimidjian & Segal, 2015). The impact of mindfulness meditation on participants, long enough time since completing the 8-week MBI programs is rarely studied. The improved emotion-regulation and stress, depression and anxiety reduction are not as often studied from the long-term perspective (Harp et al, 2022). To support this critical point, one study by Kuyken et al. (2022) did a one-year follow-up of the school-based mindfulness training, focusing on students in middle schools and high schools and found no significant difference between baseline and first end point (one-year follow- up) on dimensions of self-reports for depression, self-reported social-emotional behavioural functioning, and self-reported well-being (Kuyken et al., 2022). Furthermore, this study brings us to the second vulnerability related to the heavy reliance on self-reported questionnaires which has been identified as one of the major sources of flawed research on the MBIs efficacy. Data obtained from the self-reported questionnaires can be misleading, creating biases within the MBIs research literature (Goldberg et al, 2021, in Harp et al, 2022). „*Self-reported biases are subject to the influences of demand characteristics (i. e. post-intervention reports of lower stress or higher well-being because it is expected)*“ (Harp et al., 2022). Finally, the meta-analysis findings by Dunning et al. (2019), emphasize the most accentuated criticism of research on MBIs. Studies using less rigorous methodological designs might have overestimated the positive effects of MBIs. One example of leading to such overestimation of intervention effect may be the method of randomly allocating participants to groups; or perhaps blinding the allocation to group to participants; or the degree to which studies precisely report the prespecified outcomes assessed (Dunning et al., 2019). As far as the disparate training protocols and study designs, the meta-analysis conducted by Khoury et al. (2015) confirmed high heterogeneity in effect sizes observed as individual studies used various study designs (some traditional training protocol of MBSR, some shorter versions of

MBSR or other types of MBIs), implemented training protocols and different measures to assess the targeted outcomes. This potential threats to internal validity of MBIs study findings were also reflected in studies not using tight methodological design; studies not implementing active or non-active (i. e. waitlist) control groups. Studies with the higher risk of bias have shown overall tendency to produce bigger effect sizes (Dunning et al., 2019). What kind of corrective measures could we, the mindfulness meditation researchers, take to elevate the quality of methodological design of MBIs to ensure the high-quality research findings? And by doing so, offer our society the type of research and support it deserves.

4 Discussion

The call for more rigorous randomized controlled studies can be the first step toward future high-quality research of MBIs. Dimidjian and Segal (2015) emphasize one particular area of the focus of the current research in MBIs; the development and exploration of MBIs with novel populations and target problems while frequently ignoring or not exploring in great depth a systematic approach to core research questions across all stages of the research (Onken et al., 2014). *„It may represent a point of vulnerability. If the weight of clinical and scientific question remains devoted to increasing the range of applications rather than the depth of evidence base, public health impact may be limited.“* (Dimidjian & Segal, 2015, p.604). Currently, there are multiple types of MBIs with varying levels of research evidence at any stage of the research process (Crane et al., 2017). Although, using MBIs on broad range of clinical problems and populations targeted may represent a strength all the same, it is essential to clarify the core ingredients of MBIs and MBPs (mindfulness-based programs) so that the future research findings can be meaningfully interpreted and may offer the desired impact on public health (Dimidjian & Segal, 2015). Meta-analysis done by Dunning et al. (2019) point out as well to the tendency of current studies to test new MBI protocols rather than running replication of well-established MBIs. To address this possible flaw, various researchers suggest specifying intervention and target populations for well-established MBIs (Dimidjian & Segal., 2015). Furthermore, there is an ever-increasing need to systematically train MBIs teachers. The need for professional training, supervision and implementation of high-quality mindfulness teachers may provide a systematic, unified delivery of the MBI content and therefore secure a quality research from which to draw relevant outcomes (Crane et al., 2017).

Conclusion

The aim of this paper was to explore the most recent studies reporting positive effects of mindfulness-based interventions on participants levels of stress and overall psychological well-being while addressing the studies of MBIs shortcomings in relation to methodologically weak designs, potentially biased results and to offer possible solutions. Mindfulness-based intervention programs have found their place on the spectrum of interventions and support therapies for people suffering from chronic stress, stress-induced anxiety depression and panic attacks (Baer, 2015). The philosophy behind mindfulness meditation and its practical training has proved to be a valuable tool in improving psychological well-being through an active effort, change of perspective and attitudes toward life experiences (Crane et al, 2017). As far as the methodological designs, it has been highly recommended to always include the randomized controlled trials when investigating possible effects of MBIs (Dunning et al, 2019). Also, incorporating measures such as valence bias may provide more accurate assessment of possible effects of MBIs to avoid biases that may arise from the influence of demand characteristics typical for self-reported questionnaires (Harp et al, 2022). Furthermore, it would help to re-emphasize the core elements of mindfulness-based interventions that are informed by theories and practices drawn from a combination of contemplative traditions, science, and the major disciplines of medicine, psychology, and education (Crane et al., 2017). Future research shall use the agreed definitions of MBIs and established protocols delivered by systematically trained mindfulness teachers who receive proper support in forms of supervision and continuous professional development (Dimidjian & Segal, 2015). In the end, all the future studies employing the mindfulness-based interventions shall provide authentic MBIs content that stresses less emphasis on controlling one's internal experience but rather focus on developing the ability to accept the present experience, deepen metacognition, develop mindful awareness with a non-judgemental attitude and kindness. Keeping in mind and quoting Jon Kabat-Zinn, the „founding father“ of mindfulness meditation in western countries: „the practice of mindfulness is ultimately a radical act of love, love of wisdom, love of the possible, love of humanity's beauty and potential when the human mind is willing to know itself in its fullness“ (Kabat-Zinn, 2019, p. XVI).

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Contact:

Mgr. Barbora Kvapilová
Department of Psychology and Abnormal Psychology
Faculty of Education, Palacký University
Žižkovo náměstí 5, 779 00 Olomouc, Czech Republic
e-mail: barbora.kvapilova@upol.cz