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Meditation and its benefits

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Abstract

Introduction: Meditation can include any kind of practices during practitioners can calm their mind and expend their consciousness. Meditation practising have been known since a long time ago. However, in the West it is still gaining popularity since nowadays people are under more and more stress. Meditation is thought to be helpful in coping with chronic disorders or stress.

The aim of the study: The purpose of this systemic review was to collect and analyse available data about practising meditation and its effects on health.

Material and method: Standard criteria were used to review the literature data. The search of articles in the PubMed database was carried out using the following keywords: meditation, stress, health.

Description of the state of knowledge: Psychological stress contributes to the development of many disorders. Studies of the effects of meditation practises such as mindfulness meditation or yoga showed that they are beneficial for reducing stress, depression and anxiety. The study in which participated patients with active depression and anxiety showed a reduction of both depression and anxiety score after the course meditation comparing to control group. Yoga practising was also examined in many studies as a depression treatment and showed some promising results. Another study showed improvement in perceived stress after yoga practising on a group of distressed women.

Summary: Many studies of meditation practises showed their beneficial effects on depression, mood, anxiety and stress. People should be more aware of the effects of practises such as mindfulness meditation or yoga and consider their role in addressing psychological stress. Meditation may be a useful practise in maintaining health and well-being. However, further researches of meditation practises are still needed.

Key words: meditation, stress, health

1. Introduction

Ancient Eastern contemplative practices have been known to train consciousness and connect spiritually to nature for thousands of years [1]. Meditation can include any kind of practices during practitioners can calm their mind and expend their consciousness [2]. The aim of meditative practices is to achieve 'naked' awareness without content [3]. Meditative techniques are set to "mindfulness," "concentration," and "automatic self-transcendence" [4]. Mindfulness meditation which can be described as "non-elaborative, non-judgmental awareness" of the present-moment experience, refers to many meditative practices [5]. Qigong, which comes from the philosophy of traditional Chinese medicine, is another form of mind-body integrative exercises [2,6]. Qigong is practised in order to gain a harmonious flow of vital energy (*qi*) [6]. Meditative state is present in both static and dynamic form of qigong [2]. Yoga is a combination of physical postures, breathing techniques, meditation, and relaxation [7]. Nowadays, in the West more and more people use those practises in order to obtain well-being, improve their condition in chronic diseases and reduce stress [1]. The aim

of practicing mindfulness is to become more reflective and more resistant to unpleasantness inside us which is thought to be beneficial for our psychical health [8].

2. Stress

Constantly changing environment expose human to stressors. Stress activates the sympathetic nervous system which leads to release of steroid hormones from the adrenal cortex. Stress affects not only peripheral organs but also the brain which eventually will have impact on behaviour in order to adapt to changing environment [9]. Stress affects human nervous system and have long-term effects on brain, even causing its atrophy [10]. Psychological stress became a form of adaptation of the fight-or-flight response during evolution [11]. It has been known for a long time that psychological states affect physical health [12]. Psychological stress can be a trigger to many physiological responses, including the endocrine, nervous, and immune systems [13]. In a meta-analytic study it was shown that chronic stressors were associated the most with global immunosuppression [14]. Moreover, there is an increase in circulating markers of inflammation related to stress [15]. Psychosocial stress contributes to cardiovascular disease [16], neurological diseases like multiple sclerosis [17] or motor symptoms in Parkinson's disease [18] and addiction [19]. Stressful life events increase one's risk for Major Depressive Disorder (MDD) [20]. Moreover, chronic stressors was associated among the others with poorer prognosis, more frequent relapse and treatment resistance [21].

3. The influence of meditation on stress, depression and anxiety

In the study patients who were currently symptomatic with at least three previous episodes of depression and a history of suicidal ideation received Mindfulness-Based Cognitive Therapy (MBCT) with usual therapy or just usual therapy alone (TAU group). As the result, this study showed that in MBCT group self-reported symptoms of depression decreased compared to TAU group in which levels of depression remained unchanged [22]. Another study examined MBCT for patients with active depression and anxiety. Resulted were measured on Beck Depression Inventory (BDI-II) and Beck Anxiety Inventory and showed reduction in both depression and anxiety score after the course compared to the pre-course score. Most of the group thought that the course was too short. Moreover, more than half of participants continued this technique three months after the course. This study suggest that MBCT may be beneficial in treating active depression and anxiety [23]. MBCT showed positive effect on treatment-resistant depressed patients who did not respond fully to standard treatment. There was a reduction in depression symptoms associated with MBCT [24]. A meta-analytic review based on 39 studies showed that mindfulness-based therapy was moderately effective for improving anxiety and mood symptoms [25]. In another study of Mindfulness-Based interventions seventy adults with Generalized Anxiety Disorder (GAD) receive either Mindfulness-Based Stress Reduction (MBSR) or an attention control class. Participants who completed mindfulness meditation training had a greater decrease of stress-related adrenocorticotropic hormone and proimflammatory cytokines than control group [26]. Meditation-based practices are linked to positive health effects. In one study participants had residential retreat with daily yoga and meditation practises and also vegetarian diet for3

months. This retreat resulted in decreased self-reported anxiety and depression but also increased mindfulness. Moreover, the results also showed increased plasma BDNF level which is a beneficial effect since BDNF is known for its positive effects on neurons like supporting their survival and promoting the growth and differentiation of new neurons and synapses. Another result was increased cortisol awakening response which is thought to be linked to wakefulness and stress resilience in the morning. Another thing that was observed was reduction of pro-inflammatory cytokine Interleukin-12 plasma level and increase of anti-inflammatory cytokine Interleukin-10 plasma level [27]. Mindfulness training is thought to be beneficial for health due to developing new emotion regulation strategies like observing and accepting emotions without judging them [28]. The randomized controlled trial in Amsterdam recruited people suffering from stress in order to compare self-help physical activity (PA), mindfulness meditation (MM), and heart rate variability biofeedback (HRV-BF) in reducing stress. Participants were randomly allocated to one of those three interventions and each of them lasted for 5 weeks. In this study, all interventions had positive effect on reducing stress and its related symptoms. Although, there were no significant differences between efficacy of those interventions [29]. The study of intervention based on the Mindful Awareness Practices (MAPs) program in which participated breast cancer survivors showed that those who had mindfulness training recovered faster of negative affect [28]. Another study in which participated sixty older adults with subjective cognitive decline (SCD) compared practising Kirtan Kriya Meditation (KK) and music listening (ML) on stress, mood and well-being. Both the KK meditation and the ML groups showed significant improvements of mood, stress, sleep quality, well-being, and mental health component of quality of life. Those effects were particularly pronounced in the KK group [30]. The meta-analysis of randomised controlled trials (RCTs) of mindfulness-based interventions (MBIs) with all studies including only participants who were diagnosed with a current episode of a depressive or anxiety disorder found positive effect of this interventions. It was beneficial for people currently having an episode of depression [31].

4. Meditation and its impact on different conditions

Online mindfulness course was also examined for its efficacy. This online programme lasted for approximately 6 weeks contained modules from Mindfulness Based Stress Reduction and Mindfulness Based Cognitive Therapy. The result was significant reduction of perceived stress [32]. Mindfulness-based stretching and deep breathing exercise (MBX) were examined for reducing post-traumatic stress disorder (PTSD) symptoms in individuals with subclinical features of PTSD. In this study participants had their serum cortisol level measured and they were tested with PTSD Checklist–Civilian version (PCL-C). As a result, severity of PTSD symptoms decreased and basal serum cortisol concentration were normalized [33]. The literature review on the use of mind-body practices show that those practises are thought to beneficial in stress-induced illnesses [34]. In a randomized controlled pilot study older adults with chronic low back pain (CLBP) were assigned to an 8-week mindfulness-based meditation program or to a wait-list control group. This programme had positive effects on improving physical function and pain acceptance [35]. A randomized clinical trial aimed to compare mindfulness-based stress reduction (MBSR), usual care (UC) and cognitive-behavioral therapy (CBT) in treating chronic low back pain. The study showed

that both MBSR and CBT resulted in greater improvement than UC group. However, there were no significant differences in the results between MBSR and CBT groups [36]. A pilot study in which alcohol-dependent participants completed the 8-week meditation course showed decreased severity of alcohol relapse triggers. Moreover, stress, anxiety, and depression stores also decreased. Participants noticed satisfaction with meditation intervention and improved mental health [37]. In another pilot study MBSR was examined as a smoking intervention. The study showed positive association between compliance with meditation and smoking abstinence [38]. Another study focused on the influence of meditation on migraine. In this study there were four groups: Spiritual Meditation, Internally Focused Secular Meditation, Externally Focused Secular Meditation and Progressive Muscle Relaxation. Participants were randomly assigned to one of them. The result was decreased frequency of migraine headaches in spiritual meditators group compared to other groups. Although, meditation did not result in decreased perception of headache severity, lower usage of medications in this group may suggest better pain tolerance to migraine headache pain [39]. Insomnia is the most common sleep disorder [40]. In the study of mindfulness meditation as a treatment for chronic insomnia adults suffering from this disorder were randomly assigned to one of three groups: mindfulness-based stress reduction (MBSR), mindfulness-based therapy for insomnia (MBTI) or self-monitoring (SM) condition. Both MBTI and MBSR had better outcome than SM group. There was a greater reduction in insomnia severity in MBTI group compared to MBSR group [41]. The study of combination of mindfulness meditation with cognitive behavioral therapy as an insomnia treatment with the 12-month follow-up showed significant benefits of this therapy [42]. The aim of mindfulness-based therapy for insomnia is to help people suffering from insomnia to manage the emotional reactions to sleep disturbance and daytime fatigue [43]. Disturbance in sleep continuity may be caused by many antidepressant medications (ADM). In the study ADM users were randomly assigned to a Mindfulness-Based Cognitive Therapy group or waitlist control condition. MBCT group showed increased sleep efficiency and they spent less time awake at night than control group. However, benefits of meditation were specific to sleep continuity but not to sleep depth or architecture [44]. In the study comparing MBSR as a treatment for chronic primary insomnia and pharmacotherapy (PCT), 30 adults diagnosed with insomnia participated. This technique was effective for the participants. The results were increased total sleep time, reduced sleep onset latency and increased sleep efficiency by 5 month follow-up [45]. The systematic review and meta-analysis of the effects of MBTs on sleep quality in healthy adults and clinical populations showed improvement in sleep quality and reduction on insomnia severity due to MBTs. Moreover, MBTs had better effect on sleep quality in healthy individuals than clinical populations [46].

5. Benefits of yoga

Yoga, which has a 3,000 year old tradition, is now known in Western world as a holistic approach to health [47]. Yoga includes physical movement (asana), meditation (dhyana), and breathing (pranayama) [48]. In India, yoga has a history of therapeutic benefits and several decades ago in the West yoga has been popularized as a holistic wellness approach [49]. The study in San Francisco recruited people suffering from major depression of mild-to-moderate severity. The aim was to examine an 8-week hatha yoga intervention as

mono-therapy for major depression of mild-to-moderate severity. As a result, there was a greater decrease in Beck Depression Inventory-II (BDI) score in yoga practitioners group comparing to controls. Moreover, it was more likely to achieve remission for participants of yoga group [50]. In another study of the effectiveness of yoga in depression treatment there were three groups of participants: medication-alone, yoga therapy-alone and medications + yoga therapy. All three groups showed a significant reduction in Hamilton Depression Rating Scale (HDRS) at fallow-up. However, patients of groups with yoga showed greater reduction of depression scores than the patients of antidepressant alone group [51]. In another study participated patients diagnosed with unipolar major depression in partial remission. Participating in yoga classes resulted in the reduction of depression, anger, anxiety, neurotic symptoms and low frequency heart rate variability. Results suggest yoga as a promising intervention [52]. The study comparing a generic yoga module and antidepressant drugs also showed beneficial effects of yoga. Participants were non-suicidal out-patients of major depression. There were three groups of treatment: yoga-only, drugs-only or both. All three groups showed reduction in depression stores. Moreover, both yoga groups had better antidepressant effects than drugs-only group [53]. The effectiveness of yoga was also examined on the group of distressed women. This study was a 3-armed randomized controlled trial in which distressed woman were assigned to yoga group 1 with twelve 90 min sessions of Iyengar yoga practice over 3 months, yoga group 2 with 24 sessions of Iyengar yoga practice over 3 months, or a waiting list control group. Both yoga groups showed significant improvement in perceived stress. Moreover, related psychological and physical outcomes were also improved. However, yoga classes twice a week were not superior to yoga classes once a week [54]. Another study examined the impact of meditation on work stress, anxiety and mood in full-time workers. Participants were full-time employment. In this 3-arm randomized controlled trial there were three groups: “mental silence” approach to meditation, “relaxation” active control and a wait-list control. In this study “mental silence” group were practising Sahaja Yoga meditation. Significant improvement of reduced work stress and depressed mood were observed in meditation group compared to both the relaxation control and the wait-list groups [55]. Another study tested the effects of Sudarshan Kriya yoga (SKY) on EEG and ECG signals for stress regulation. In this study EEG, ECG and Determination Test (DT) were used synergistically to quantify mental stress and Sudarshan Kriya yoga was used to reduce it. Results showed that stress affects both brain and heart functions. Moreover, Sudarshan Kriya yoga was effective in reducing stress [56]. Due to the inhibition of the posterior or sympathetic area of the hypothalamus, yoga leads to optimizing sympathetic responses to stressful stimuli of the body. Hypothalamus and the limbic system are linked to emotional expression and practising yoga also inhibits the areas responsible for fear, aggressiveness, and rage [57]. Another study evaluating yoga as a treatment for stress, anxiety and depression in women using Depression Anxiety Stress Scale-21, showed its positive effects. After 12 sessions of regular hatha yoga practice, reduced depression, anxiety and stress [58].

6. Summary

Meditation is a practise known since ages but only decades ago it started gaining popularity in Western world. Many studies of meditation practises showed their beneficial

effects on depression, mood, anxiety and stress. Considering that nowadays people are under more and more stress, meditation may be a useful practise in maintaining health and well-being. People should be more aware of the effects of practises such as mindfulness meditation or yoga and consider their role in addressing psychological stress. However, further researches of meditation practises are still needed.

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