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Effects of a mindfulness-based intervention on fertility quality of life and pregnancy rates among women subjected to first in vitro fertilization treatment

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ABSTRACT

Generally, undergoing an in vitro fertilization (IVF) treatment is an emotional and physical burden for the infertile woman, which may negatively influence the treatment outcome. We conducted a study to investigate the effectiveness of a mindfulness-based intervention (MBI) among women subjected to first IVF treatment at a fertility medical center in China. Among infertile women registered for their first IVF treatment, 58 completed the intervention, and 50 were assigned to a control group using a non-randomized controlled study. Standardized measures of mindfulness, self-compassion, emotion regulation difficulties, infertility-related coping strategies and fertility quality of life (FertiQoL) were endorsed pre- and post-MBI, and measure of pregnancy rates at the sixth months after the intervention. Both groups were shown to be equivalent at baseline. By the end of the intervention, women who attended the intervention revealed a significant increase in mindfulness, self-compassion, meaning-based coping strategies and all FertiQoL domains. Inversely, they presented a significant decrease in emotion regulation difficulties, active- and passive-avoidance coping strategies. Women in the control group did not present significant changes in any of the psychological measures. Moreover, there were statistically significant differences between participants in the pregnancy rates, the experiment group higher than the control group. Being fully aware of the present moment without the lens of judgment, seems to help women relate to their infertility and IVF treatment in new ways. This is beneficial for promoting their self-compassion, adaptive emotion regulation and infertility-related coping strategies, which, in turn, may influence the FertiQoL and pregnancy rates. The brief and nonpharmaceutical nature of this intervention makes it a promising candidate for women' use during first IVF treatment.

1. Introduction

Rather than a medical issue, infertility is seen as a developmental crisis (Sexton, Byrd, O Donohue, & Jacobs, 2010), experienced by individuals and couples as a stressful and often heartbreaking situation (Cousineau & Domar, 2007). Although both sexes are emotionally affected by infertility, women appear to experience greater stress and pressure (Newton, Sherrard, & Glavac, 1999; Ramazanzadeh, Noorbala, Abedinia, & Naghizadeh, 2009) as well as lower quality of life (El Kissi et al., 2014). Women who suffer from fertility issues often use in vitro fertilization (IVF) to realize their wish to have children. However, IVF is a multidimensional stressor, including the treatment itself and its unpredictable outcome (Verhaak et al., 2007), leaving the women physically and emotionally exhausted (Kaliarnta, Nihlén-Fahlquist, & Roeser, 2011). Despite there are inconclusive conclusion regarding the association between emotional distress and pregnancy outcome in women undergoing assisted reproductive treatment (Greil, Slauson Blevins, & McQuillan, 2010), patients may still want interventions to improve quality of life during treatment (Boivin et al., 2011a,b). Given that many infertile individuals seeking medical treatment experience the impairments in QoL for years (Ferreira, Vicente, Duarte, & Chaves, 2015), an increased focus on improving QoL, one of the most important issues to be addressed in infertility counseling (Haica, 2013), may benefit many

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patients. Updating knowledge concerning the improvement of the QoL of women with fertility difficulties has become increasingly important for health professionals (Ferreira et al., 2015).

There are many psychosocial variables that may impact the individual's perception of QoL, including mindfulness (Carlson, Speca, Patel, & Goodey, 2004; Witek-Janusek et al., 2008), self-compassion (Neff, 2003a,b; Shapiro, Astin, Bishop, & Cordova, 2005), emotion regulation (Ciuluvica, Amerio, & Fulcheri, 2014) and coping strategies (Stanton, Tennen, Affleck, & Mendola, 1992).

Mindfulness is commonly and operationally defined as the quality of consciousness or awareness that arises through intentionally attending to present moment experience in a non-judgmental and accepting way (Kabat-Zinn, 1994). It can also be understood as a disposition, trait or stable tendency to be mindful in everyday life (Brown & Ryan, 2003). Dispositional mindfulness has been shown to be related to less perceived stress (Tran et al., 2014), fewer depressive and anxiety symptoms (Campos et al., 2015) or acceptance of pain (Cebolla, Luciano, DeMarzo, Navarro-Gil, & Campayo, 2013). Self-compassion represents a warm and accepting stance towards those aspects of oneself and one's life that are disliked (Neff, 2003a,b). It is a powerful predictor of mental health. Several studies have shown that self-compassion is negatively associated with anxiety, stress, depression, rumination (Castilho, Pinto Gouveia, & Duarte, 2015; Neff, Rude, & Kirkpatrick, 2007; Raes, 2010). On the contrary, self-compassion is strongly and positively linked to psychological well-being, happiness, life satisfaction, optimism, emotional intelligence, and interpersonal connectedness (Neff et al., 2007). As for emotion regulation, it is the activation of a goal to influence the emotion trajectory (Gross, Sheppes, & Urry, 2011), being a mechanism underlying various forms of psychopathology and important target of treatment (Gratz & Tull, 2010). In addition, the literature on stress processes has considerably focused on coping, a class of affect regulation strategies that operate by altering physiological, experiential, or behavioral responses to stressful situations (Larsen, 2000). A review of psychosocial interventions in infertility (Boivin, 2003) indicates that the more successful interventions included the acquisition of coping techniques. Maladaptive coping styles can lead to psychological distress, unhealthy beliefs and behaviors (Karaca & Unsal, 2015), which, if fueled by the stress of continued failure to overcome childlessness, is likely to further damage women's emotional well-being (van den Akker, 2005). Emotion regulation overlaps with coping, but refers to attempts to influence which emotions one has, when one has them, and how one experiences or expresses these emotions (Gross, 1998). On the other hand, coping may emphasis on alleviating stress responses and its relatively long temporal horizon (Gross, 2015).

Infertility individuals seem to struggle with being kind and understanding towards themselves in instances of pain and failure, and less capable of perceiving their experiences as part of the larger human experience, as well as less aware of their unpleasant thoughts and feelings in an open and non-judgmental way (Gilbert, 2005; Neff, 2003a,b; Pinto-Gouveia, Galhardo, Cunha, & Matos, 2012). In addition, infertile women generally respond to infertility with deep sorrow and mourning, which can lead to the adoption of maladaptive coping strategies such as crying, praying, and a belief in God (Farzadi, Mohammadi-Hosseini, Seyyed-Fatemi, & Alikhah, 2007; Schmidt et al., 2005). Therefore, some researchers suggested that interventions that target emotion-regulation, mindfulness, self-compassion and coping strategies may improve the effectiveness of psychotherapeutic interventions (Berking et al., 2008).

Meanwhile, a growing body of robust evidence has demonstrated that mindfulness-based interventions (MBIs) are effective in improving a range of clinical and non-clinical psychological outcomes in comparison to control conditions (Gu, Strauss, Bond, & Cavanagh, 2015). MBIs significantly improve the QoL in breast and prostate cancer patients (Carlson et al., 2004, 2007; Witek-Janusek et al., 2008), people with generalized anxiety disorder (Morgan, Graham, Hayes-Skelton, Orsillo, & Roemer, 2014), recurrently depressed patients (Teasdale et al., 2000), a heterogeneous patient populations (Reibel, Greeson, Brainard, & Rosenzweig, 2001). In addition, correlational research supports the proposed association between mindfulness and reduced emotion regulation difficulties (Baer, 2006; Hayes & Feldman, 2004). Meditators reported significantly higher levels of mindfulness, self-compassion, and lower level of difficulties with emotion regulation (Lykins & Baer, 2009). In a study in women newly diagnosed with early stage breast cancer, the results show that women in the midst of breast cancer treatment, who participated in the MBSR program, reported more improvements in coping effectiveness (Witek-Janusek et al., 2008). Thus, given that special physical, psychological and behavioral characteristics among women undergoing first IVF-treatment, as well as the efficacy of MBIs, the women undergoing first IVF treatment may also benefit from MBIs. Moreover, although there are some studies that have applied MBIs into infertility (Galhardo, Cunha, & Pinto-Gouveia, 2013; Peterson & Eifert, 2011) and proved effective in decreasing psychological distress, the studies that evaluate the effectiveness of MBIs on fertility quality of life (FertiQoL) and treatment outcomes among women undergoing first IVF treatment is few.

Therefore, the major goal of present study is to evaluate the effectiveness of a MBI on FertiQoL, mindfulness, self-compassion, emotion regulation difficulties, infertility-related coping strategies and pregnancy outcome among infertile women undergoing first IVF treatment in study group when compared to women in control group. The measure outcomes include mindfulness, self-compassion, emotion regulation difficulties, infertility-related coping strategies, FertiQoL and pregnancy rate. Our overall hypothesis is that the MBI will improve mindfulness, self-compassion, emotion regulation, coping strategies and ultimately lead to favorable changes in FertiQoL and pregnancy rate in women undergoing first IVF treatment. This would support the integration of MBI with conventional medical treatments to improve FertiQoL and promote treatment outcomes in first IVF-treatment women.

2. Materials and methods

2.1. Participants

Potential candidates were women that attended to the fertility medical center in Southwest Hospital, Chongqing, China, for their first IVF treatment. Inclusion criteria were infertile women who had registered for their first IVF treatment; were willing to participate in the study; were able to read and understand the questionnaires; had never received a mental disorder diagnosis or psychological treatment from a mental health professional; hadn't undergone yoga or meditation previously.

2.2. Procedures

On the every afternoon from Monday to Friday per week, infertile women were informed about the study by the first author at the end of their registration for IVF treatment in the following days. The aims of the study, inclusion criteria, participants' role, researchers' obligations, and procedure to participate were explained to them.

During the recruitment period (from November 2013 to November 2014), we invited 316 eligible women, and 166 of them agreed to participate. Participants who volunteered to participate and enrolled for the MBI program were included in the