

## **MDMA-assisted psychotherapy; Possible treatment for post-partum depression?**

Post-partum depression is a mood disorder occurring in women, usually appearing between four and 12 months after the birth of a child (Stewart and Vigod 2019). Post-partum depression is characterized by feelings of guilt, worthlessness, anxiety or “emptiness”, problems sleeping, changes in appetite, and somatic symptoms that occur after the birth of a child. Caring for a newborn child involves major modifications in activity, including shifts in daily activity, attention, and sleep. Women who give birth experience changes in hormone levels, and new parents have to reassess their time and resources to adjust to caring for an infant. A meta-analysis of 143 studies in 40 countries reported average prevalence in the US to be 15.4% (Halbreich and Karkun 2006). Prevalence in other countries ranged from 0.5% in Singapore to 57% in Brazil. Post-partum depression is generally diagnosed in women, but the condition is now being recognized in men as well (Scarff 2019; Stein et al. 2014).

Causes of post-partum depression span multiple levels of analysis, and include biological, nutritional, psychological and societal factors (Stein et al. 2014; Zhao and Zhang 2020). A recent systematic review and meta-analysis concluded that a range of factors contribute to development of post-partum depression. These included, but were not limited to, vitamin D deficiency, sleep disruption, gestational diabetes, lack of social support, experiencing violence or abuse, history of mental health disorders and immigrant status (Zhao and Zhang 2020), suggesting a complex interplay of factors involved in the condition. An intervention that can rapidly remedy postpartum depression could thus improve the lives of parents and children and prevent disruptions to emotional and physical growth for children of parents with this condition.

Depression during pregnancy can increase the risk of premature delivery and reduce breastfeeding initiation (Grigoriadis et al. 2013). Children of parents with post-partum depression are at greater risk of difficulties with emotional regulation, increased insecure attachment, and increased likelihood of depression diagnosis at age 18. Some studies have found that postpartum depression interferes with growth and learning in children (Stein et al. 2014).

Treatment of post-partum depression consists of psychotherapies and pharmacotherapies similar to those used to treat depression, and include cognitive behavioral psychotherapy and SSRIs. Treatment of post-partum depression can also include strategies to protect sleep and encouraging exercise (Stewart and Vigod 2019), and improve parent-child interactions, and treatments can include more than one component (Stein et al. 2014). Some studies have found that a given treatment, such as interpersonal psychotherapy, can address parental depression without necessarily improving health outcomes in children (Stein et al. 2014).

MDMA is a ring-substituted phenethylamine structurally similar to amphetamines and mescaline; it is a triple monoamine releaser, causing the release of serotonin, norepinephrine, and dopamine (Han and Gu 2006; Setola et al. 2003; Simmler et al. 2013; Simmler et al. 2014). MDMA elevates levels of oxytocin, cortisol, and prolactin (Dumont et al. 2009; Grob et al. 1996; Harris et al. 2002; Hysek et al. 2012; Kirkpatrick et al. 2014). MDMA increases prosociality, self-compassion and interpersonal closeness in healthy volunteers, and makes bad memories easier to bear (Bedi et al. 2010; Carhart-Harris et al. 2014; Kamboj et al. 2018; Kirkpatrick et al. 2015). The increases in empathy and self-compassion and the reduced intensity

of unpleasant memories and increased prosociality makes MDMA a candidate for supporting and enhancing psychotherapy.

Randomized, placebo-controlled trials report that MDMA-assisted therapy reduced PTSD symptoms when compared with placebo (Jerome et al. 2020; Mithoefer et al. 2013; Mithoefer et al. 2019; Mithoefer et al. 2018; Mithoefer et al. 2012; Oehen et al. 2013; Ot'alora et al. 2018). A study in autistic adults with social anxiety reported reduced social anxiety after MDMA-assisted therapy (Danforth et al. 2018). MDMA-assisted therapy may also help couples consisting of a person with PTSD and a person without struggling with PTSD and its effects on their relationship (Monson et al. 2020; Wagner et al. 2019). Along with reducing PTSD symptom severity, a pooled analysis of data from RCTs of MDMA-assisted psychotherapy reported a reduction in symptoms of depression (Mithoefer et al. 2019). Participants with PTSD showed a higher degree the personality trait openness to experience after undergoing MDMA-assisted therapy, a change in personality that may make people more comfortable with new experiences (Wagner et al. 2017). In addition to anxiety reduction, MDMA may offer a greater opportunity to experience self-compassion (Kamboj et al. 2018).

In studies that have investigated the therapeutic benefits of MDMA-assisted therapy, participants undergo up to three MDMA-assisted sessions spaced approximately a month apart, rather than daily administration of a medication. These sessions occur within a course of talk therapy that includes preparation and integration of the experience after each session. The treatment centers around fully experiencing emotionally difficult thoughts, feelings, and memories in a supportive environment, and integrating these experiences subsequent to each MDMA-assisted session (Feduccia et al. 2018; Mithoefer et al. 2016).

MDMA-assisted therapy may be particularly helpful for parents experiencing post-partum depression because of its effects on affiliation, prosociality, openness, and compassion toward the self and others, and the relative rapidity of its therapeutic effects. MDMA-assisted therapy may permit parents to address and confront any memories and feelings of childhood adversity and increase compassion for themselves as parents. Response to MDMA-assisted therapy appears to be rapid, this treatment may have a good chance of reducing the risks experienced by children of parents with postpartum depression.

Given the very promising findings for MDMA-assisted therapy in treating PTSD and social anxiety and given its unique effects upon affiliation and bonding and relative rapidity of response, it is worth investigating MDMA-assisted therapy as a treatment for parents with post-partum depression.

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