

Meditation - an Effective Treatment Mode for Substance Use Disorders

Ruwan M Jayatunge

Abstract: This article discusses the ill effects of substance use disorders and efficacy of incorporating meditation into the treatment of addictions. Meditation helps to reduce stress, anxiety, depression and pain associated with substance use disorders. It enhances brain functions and promotes plasticity.

According to the World Health Organization Substance Use Disorders represent a significant public health problem worldwide (WHO, 1999). Substance use disorders include substance abuse and substance dependence. Substance use disorders are a significant source of morbidity and mortality (Shinn & Greenfield, 2010).

Substance use disorders (SUD) range from problematic use to addiction. The SUD commonly referred to as “drug addiction” is characterized by physiological dependence accompanied by the withdrawal syndrome on discontinuance of the drug use, psychological dependence with craving, the pathological motivational state that leads to the active drug-seeking behavior, and tolerance, expressed in the escalation of the dose needed to achieve a desired euphoric state. Drug addiction can be described as a mental disorder with idiosyncratic behavioral, cognitive, and psychosocial features (Sokhadze et al., 2008). Substance abuse can also induce or exacerbate psychiatric symptoms such as depression, anxiety, posttraumatic stress disorder (PTSD) cognitive disorders or insomnia (Loftis & Huckans, 2013).

The American Society of Addiction Medicine (2011) defines Addiction as a primary, chronic disease of brain reward, motivation, memory and related circuitry. Dysfunction in these circuits leads to characteristic biological, psychological, social and spiritual manifestations. This is reflected in an individual pathologically pursuing reward and/or relief by substance use and other behaviors.

Individuals with substance use disorders are heterogeneous with regard to a number of clinically important features and domains of functioning (APA, 2006). The global burden of disease attributable to alcohol and illicit drug use amounts to 5.4% of the total burden of disease (WHO). An estimated 76.4 million people worldwide meet criteria for alcohol use disorders, and 15.3 million meet criteria for drug use disorders (Loftis & Huckans, 2013).

Care of individuals with substance use disorders includes conducting a complete assessment, treating intoxication and withdrawal syndromes when necessary, addressing co-occurring psychiatric and general medical conditions, and developing and implementing an overall treatment plan (APA, 2006).

The incorporation of spiritual and religious elements into the treatment of substance-related disorders is common in many therapeutic treatment settings because of their integral role in producing positive treatment outcomes (Avants et al., 2001; Parhami et al., 2014). A substantial amount of research suggests that meditation associated with better treatment outcomes in

substance-related disorders. Dakwar and Levin (2009) stated that meditation represents a promising therapeutic approach in the amelioration of symptoms caused by the SUDs.

The word “meditation” is derived from the Latin *meditari*, which means “to engage in contemplation or reflection (Hussain & Bhushan, 2010). According to Manocha (2000) meditation is a discrete and well-defined experience of a state of “thoughtless awareness” or mental silence, in which the activity of the mind is minimized without reducing the level of alertness.

The U.S. National Center for Complementary and Alternative Medicine (NCCAM) defined meditation as “a conscious mental process that induces a set of integrated physiological changes termed the relaxation response”. Meditation practices purportedly help people develop focused and sustained attention; cultivate feelings of compassionate concern for self and others (Rosenberg et al., 2015).

Practice of meditation has become an increasingly popular treatment for medical and psychological symptoms (Black, 2014). Research has shown that Meditation-based interventions enhance psychological well-being and decrease substance use. For instance Simpson and colleagues (2007) demonstrated that Vipassana meditation was associated with reductions in substance use. Witkiewitz, Bowen, Douglas and Hsu (2013) point out that mindfulness reduces substance craving.

The SUDs are complex in nature and accompanied by stress, anxiety, depression and often aggravated by physical pain. Meditation is a stress breaker. Dunlop (2015) and Redstone (2015) highlight the stress reducing effect in meditation practice. Meditation helps to combat depression (Teasdale et al, 2000). Correspondingly Serpa and team (2014) report anxiety reduction via mindfulness and Chapin and colleagues (2014) highlight pain reduction following meditation practice.

Addictive substances can damage brain cells and cause structural changes. Imaging studies have provided evidence of such changes following addictive substances (Volkow et al., 2004). Addiction changes the brain's reward system (Lubman et al., 2004). Torregrossa, Corlett and Taylor (2011) state that exposure to addictive substances has been shown to create enduring changes in brain structure and function that are thought to underlie the transition to addiction.

Meditation has positive effects on the brain structure and function that has been altered by the addictive substances. Meditation results in observable changes in brain structure related to memory, sense of self, empathy, and stress (Sorrell, 2015). Kang and team (2013) hypothesized that long-term meditators have structural differences in both gray and white matter. Leung and colleagues (2013) suggest that experience in loving kindness meditation may influence brain structures associated with affective regulation. Tang and colleagues (2010) believe that short-term meditation induces white matter changes in the anterior cingulate and increases network efficiency of the anterior cingulate cortex (Xue et al., 2011).

Lazar and colleagues (2005) hypothesized that meditation practice promote neural plasticity. Kang and team (2013) suggest that meditation alters the functional and structural plasticity.

Long-term meditation practice can trigger meditation-specific neuroplastic changes in the brain regions underlying cognitive control and affective regulation (Natalie et al., 2014). Therefore meditation could be described as a noninvasive strategy to optimize brain plasticity.

Xue and colleagues (2014) explicate that short-term meditation induces changes in brain resting EEG theta networks. Meditation may have an immediate impact on information processing (Colzato et al., 2015). Meditation does influence emotion processing (Lee et al., 2012). In addition meditation improves executive functioning (Teper & Inzlicht, 2013). Findings of Guglietti and team (2013) coincide that meditation processes are linked to GABAergic cortical inhibition, a mechanism previously implicated in improved cognitive performance and enhanced emotional regulation. Thus meditation can be used in symptom reduction and improve psycho social well-being in individuals with substance use disorders.

Conclusion

Substance use disorders have become a global public health problem. It impacts the individual on multiple levels. To treat substance use disorders meditation can be recommended as one of the efficient, cost effective and feasible methods. Substance use disorders are associated with anxiety, pain, depression and physical pain. Meditation has anxiety; pain and depression reduction effects. Also it helps to reduce drug cravings. Addiction substances often damage brain structure and its functions. Meditation enhances brain's functions and also helps to improve plasticity. Therefore meditation is one of the efficient modes to treat Substance use disorders.

References

Avants, S.K., Warburton, L.A., Margolin, A. (2001). Spiritual and religious support in recovery from addiction among HIV-positive injection drug users. *Journal of Psychoactive Drugs*. 33(1):39-45.

Black, D.S. (2014). Mindfulness-based interventions: an antidote to suffering in the context of substance use, misuse, and addiction. *Subst Use Misuse*. 49(5):487-91.

Chapin, H. L., Darnall, B. D., Seppala, E. M., Doty, J. R., Hah, J. M., & Mackey, S. C. (2014). Pilot study of a compassion meditation intervention in chronic pain. *Journal of Compassionate Health Care*, 1(1), 1-12

Colzato, L.S., Sellaro, R., Samara, I., Hommel, B. (2015). Meditation-induced cognitive-control states regulate response-conflict adaptation: Evidence from trial-to-trial adjustments in the Simon task. *Conscious Cogn*. 13;35:110-114.

Dakwar, E., Levin, F.R. (2009). The emerging role of meditation in addressing psychiatric illness, with a focus on substance use disorders. *Harv Rev Psychiatry*. 17(4):254-67.

Dunlop, J.(2015).Meditation, stress relief, and well-being. *Radiol Technol.* ;86(5):535-55.

Guglietti, C.L., Daskalakis, Z.J., Radhu, N., Fitzgerald, P.B., Ritvo, P.(2013).Meditation-related increases in GABAB modulated cortical inhibition. *Brain Stimul.* ;6(3):397-402.

Hussain, D., Bhushan, B.(2010).Psychology of Meditation and Health: Present Status and Future Directions.*International Journal of Psychology and Psychological Therapy.*10, 3, pp. 439-451.

Kang, D.H. , Jo, H.J., Jung, W.H., Kim, S.H., Jung, Y.H., Choi, C.H., Lee, U.S., An, S.C., Jang, J.H., Kwon, J.S. (2013). The effect of meditation on brain structure: cortical thickness mapping and diffusion tensor imaging. *Soc Cogn Affect Neurosci.* 8(1):27-33.

Lazar, S.W. , Kerr, C.E., Wasserman, R.H., Gray, J.R., Greve, D.N., Treadway, M.T., McGarvey, M., Quinn, B.T., Dusek, J.A., Benson, H., Rauch, S.L., Moore, C.I., Fischl, B. (2005). Meditation experience is associated with increased cortical thickness. *Neuroreport.* 28;16(17):1893-7.

Lee ,T.M., Leung, M.K, Hou, W.K., Tang, J.C., Yin, J., So, K.F., Lee, C.F., Chan, C.C.(2012). Distinct neural activity associated with focused-attention meditation and loving-kindness meditation. *PLoS One.*;7(8):e40054.

Leung, M.K., Chan, C.C., Yin, J., Lee, C.F., So, K.F., Lee, T.M.(2013).Increased gray matter volume in the right angular and posterior parahippocampal gyri in loving-kindness meditators. *Soc Cogn Affect Neurosci.* ;8(1):34-9.

Loftis, J.M., Huckans, M.(2013).Substance use disorders: psychoneuroimmunological mechanisms and new targets for therapy.*Pharmacol Ther.* 139(2):289-300.

Lubman, D.I. , Yücel, M., Pantelis, C.(2004).Addiction, a condition of compulsive behaviour? Neuroimaging and neuropsychological evidence of inhibitory dysregulation. *Addiction.* ;99(12):1491-502

Manocha ,R. (2000). Why meditation. *Australian Family Physician*, 29, 1135-8.

Natalie T. Y. Leung, Mandy, M., Lo, and Tatia M. C. (2014). Potential Therapeutic Effects of Meditation for Treating Affective Dysregulation.*Evidence-Based Complementary and Alternative Medicine Volume.* Article ID 402718, 7 pages.

National Center for Complementary and Alternative Medicine (2004, October). Backgrounder: Mind body medicine: An overview. www.nccam.nih.gov, Accessed July, 2005.

Parhami, I., Davtian, M., Collard, M., Lopez, J., Fong, T.W.(2014).A preliminary 6-month prospective study examining self-reported religious preference, religiosity/spirituality, and retention at a Jewish residential treatment center for substance-related disorders.*J Behav Health Serv Res.* ;41(3):390-401.

Practice Guidelines for the Treatment of Psychiatric Disorders: Compendium (2006). American Psychiatric Association.

Redstone, L. (2015). Mindfulness meditation and aromatherapy to reduce stress and anxiety. *Arch Psychiatr Nurs.* ;29(3):192-3.

Rosenberg, E.L., Zanesco, A.P., King, B.G., Aichele, S.R., Jacob, s T.L., Bridwell, D.A, MacLean, K.A., Shave,r P.R., Ferrer, E., Sahdra, B.K., Lavy, S., Wallace, B.A., Saron, C.D. (2015).Intensive Meditation Training Influences Emotional Responses to Suffering. *Emotion.*

Serpa, J.G ., Taylor, .SL., Tillisch, K.(2014). Mindfulness-based stress reduction (MBSR) reduces anxiety, depression, and suicidal ideation in veterans.*Med Care.* 2014 Dec;52(12 Suppl 5):S19-24.

Shinn, A.K., Greenfield, S.F. (2010).Topiramate in the treatment of substance-related disorders: a critical review of the literature.*J Clin Psychiatry* ;71(5):634-48

Simpson, T.L., Kaysen, D., Bowen, S., MacPherson, L.M., Chawla, N., Blume, A., Marlatt, G.A., Larimer, M. (2007).PTSD symptoms, substance use, and vipassana meditation among incarcerated individuals.*J Trauma Stress.* ;20(3):239-49.

Sokhadze, T.M., Cannon, R.L., Trudeau, D.L.(2008).EEG biofeedback as a treatment for substance use disorders: review, rating of efficacy, and recommendations for further research. *Appl Psychophysiol Biofeedback.* 2008 Mar;33(1):1-28.

Sorrell, J.M. (2015). Meditation for older adults: a new look at an ancient intervention for mental health. *J Psychosoc Nurs Ment Health Serv.* 1;53(5):15-9. doi:

Tang, Y.Y., Lu, Q., Geng, X., Stein, E.A., Yang, Y., Posner, M.I.(2010). Short-term meditation induces white matter changes in the anterior cingulate. *Proc Natl Acad Sci U S A.* ;107(35):15649-52.

Teper, R., Inzlich,t M.(2013).Meditation, mindfulness and executive control: the importance of emotional acceptance and brain-based performance monitoring.*Soc Cogn Affect Neurosci.* 8(1):85-92.

Teasdale,J. D., Segal,Z. V.,Williams,J., .et.al. (2000).Prevention of relapse/recurrence in major depression by mindfulness-based cognitive therapy. *Journal of Consulting and Clinical Psychology,* 68, 615–623.

Torregrossa, M.M. , Corlett, P.R., Taylor, J.R. (2011).Aberrant learning and memory in addiction. *Neurobiol Learn Mem.* ;96(4):609-23.

Volkow, N.D. , Fowler, J.S., Wang, G.J.(2004).The addicted human brain viewed in the light of imaging studies: brain circuits and treatment strategies.*Neuropharmacology.* 47 Suppl 1:3-13.

Witkiewitz, K., Bowen, S, Douglas, H., Hsu, S.H.(2013). Mindfulness-based relapse prevention for substance craving. *Addict Behav.* 38(2):1563-71.

WHO (1999). *Global status report on Alcohol*. Geneva.

Xue, S., Tang, Y.Y., Posner, M.I.(2011). Short-term meditation increases network efficiency of the anterior cingulate cortex. *Neuroreport.* 24;22(12):570-4.

Xue, S.W., Tang, Y.Y., Tang, R., Posner, M.I.(2014). Short-term meditation induces changes in brain resting EEG theta networks. *Brain Cogn.* ;87:1-6.