

Mindful smoking cessation: a promising and effective strategy

Ming Zheng¹, Yinan Ding^{2,3}, Yuzheng Hu¹ and Yanhui Liao^{2*}

¹ Department of Psychology and Behavioral Sciences, Zhejiang University, Hangzhou 310030, China

² Department of Psychiatry, Sir Run Run Shaw Hospital, Zhejiang University School of Medicine, 310016, Hangzhou, China

³ Department of Psychology and Neuroscience, Boston College, Chestnut Hill, MA, 02467, USA

* Corresponding author, E-mail: liaoyanhui@zju.edu.cn

Smoking remains a widespread health issue globally^[1], leading to over 8 million deaths annually. Of these, more than 7 million are attributed to direct tobacco use, while approximately 1.3 million deaths occur among non-smokers exposed to secondhand smoke^[2]. Despite the variety of smoking cessation methods available, such as nicotine replacement therapy and behavioral interventions, success rates remain low. Nicotine replacement products (e.g., smokeless tobacco) still contain nicotine, which makes them highly addictive and has been linked to various head and neck cancers^[3]. Furthermore, population-based studies reveal that adherence to nicotine replacement therapy is only 26%. Existing behavioral interventions also show limited efficacy, with abstinence rates hovering between 20% and 30% over the past three decades. An urgent need remains for a promising and effective strategy to address nicotine dependence.

Mindfulness is a psychological training method that helps smokers better cope with the challenges of quitting^[4]. In recent years, it has gained significant attention for its potential to alleviate cigarette cravings and withdrawal symptoms, as well as support smoking cessation^[5].

The role of mindfulness in addressing the components of smoking addiction: craving

Mindfulness interventions have shown great promise in addressing the core component of smoking addiction: craving. Craving, defined as an intense and conscious desire to consume a specific drug or food, is strongly associated with subsequent smoking, particularly among daily smokers^[6]. Also, intense and unrelenting craving often precedes the initial lapse following a cessation attempt, and studies have shown that increases in the intensity of craving can accurately predict lapse and relapse risk. Therefore, craving is often considered an appropriate target for intervention, and the effectiveness of mindfulness interventions may largely lie in their impact on cravings. Empirical studies have shown that both long-term and short-term training, or even the use of mindfulness strategies alone can impact craving^[7]. Various models explain how mindfulness reduces craving, and based on these models, researchers have proposed that three core strategies of mindfulness—awareness, acceptance, and decentering—can reduce craving by: (1) Interrupting craving-related elaboration by reducing self-referential processing; and (2) decoupling the relationship between craving and craving-related behavior, facilitating an extinction process where the individual inhibits craving-related behavior.

Mindfulness in addressing automatic responses and negative affects in smoking addiction

Repeated smoking can lead to addictive behaviors that become automated or habitual, resulting in cue-induced actions that are

largely unconscious and outside of intentional control^[8]. Mindfulness, which increases awareness of present experiences, effectively interrupts these automatic responses triggered by cues^[9].

For addiction, the motivation for reward-seeking behavior initially stems from positive reinforcement, such as the pleasurable effects of smoking. Over time, however, the behavior may shift from seeking pleasure to avoiding the discomfort or anxiety caused by withdrawal. This shift significantly increases the risk of relapse, as negative emotional states are most pronounced during withdrawal. Negative affects, such as stress and anxiety, is directly linked to heightened brain reactivity to stressors, making it harder for individuals to cope with cravings and negative emotions, further complicating the quitting process. Mindfulness can be an effective strategy for addressing this issue by alleviating negative emotions. Numerous studies have shown that practicing mindfulness can reduce distress, with this effect being mediated by a decrease in rumination, which then decouples from negative affects and smoking urge^[10]. Mindfulness training can also effectively treat pain, anxiety disorders, and depression, which can further alleviate cravings.

Mindfulness-based interventions, such as Mindfulness-Based Relapse Prevention (MBRP) and Mindfulness-Oriented Recovery Enhancement (MORE), have been specifically designed for addictive disorders. These interventions, along with other short-term mindfulness training programs, have shown promising results in reducing smoking and improving emotional regulation. Overall, mindfulness appears to be a valuable tool for helping individuals quit smoking by addressing both the psychological and physiological aspects of addiction.

Despite its potential, mindfulness-based smoking cessation programs face several challenges. Mindfulness interventions typically require consistent practice, often over the course of 8 weeks, which may be difficult for some individuals to maintain. Recently, there has been a rise in online mindfulness programs, making it easier for individuals to access smoking cessation resources. However, such programs have been less commonly used. Additionally, mindfulness-based smoking cessation programs remain relatively scarce in certain regions, including China, limiting their accessibility. To address these challenges, it is crucial to integrate mindfulness-based approaches into existing smoking cessation programs. Government support and community-based resources, including hospitals and public health initiatives, can play a pivotal role in increasing accessibility and encouraging the widespread adoption of mindfulness techniques for smoking cessation.

Mindfulness-based interventions offer promising approaches to enhancing smoking cessation programs and developing more personalized and adaptive treatments. However, further research and broader implementation are needed to fully realize their potential. The *Journal of Smoking Cessation* serves as a key platform for sharing innovative research and evidence-based strategies to help individuals overcome nicotine addiction. Through the dedication of

the editorial community, authors, reviewers, and readers, we invite your contributions to advance this critical work. Together, we strive to promote better health outcomes through promising scientific findings.

Ming Zheng Yinan Ding

Yanhui Liao

Conflict of interest

The authors declare that they have no conflict of interest.

Dates

Received 12 November 2024; Revised 12 November 2024;
Accepted 15 November 2024; Published online 27 November 2024

References

- Centers for Disease Control and Prevention (CDC). 2008. Cigarette smoking among adults – United States, 2007. *Morbidity and Mortality Weekly Report* 57(45):1221–26
- Institute for Health Metrics and Evaluation (IHME). 2020. *Global Burden of Disease Study 2019 (GBD 2019) Data Resources*. Seattle, WA, USA: Institute for Health Metrics and Evaluation (IHME). <https://ghdx.healthdata.org/gbd-2019> (Accessed on 17 July 2023)
- Siddiqi K, Husain S, Vidyasagaran A, Readshaw A, Mishu MP, et al. 2020. Global burden of disease due to smokeless tobacco consumption in adults: an updated analysis of data from 127 countries. *BMC Medicine* 18:222
- Tapper K. 2018. Mindfulness and craving: effects and mechanisms. *Clinical Psychology Review* 59:101–17
- Goldberg SB, Riordan KM, Sun S, Davidson RJ. 2022. The empirical status of mindfulness-based interventions: a systematic review of 44 meta-analyses of randomized controlled trials. *Perspectives on Psychological Science* 17(1):108–30
- Carter BL, Lam CY, Robinson JP, Paris MM, Waters AJ, et al. 2008. Real-time craving and mood assessments before and after smoking. *Nicotine & Tobacco Research* 10(7):1165–69
- Zheng M, Hong T, Zhou H, Garland EL, Hu Y. 2024. The acute effect of mindfulness-based regulation on neural indices of cue-induced craving in smokers. *Addictive Behaviors* 159:108134
- Tiffany ST, Cox LS, Elash CA. 2000. Effects of transdermal nicotine patches on abstinence-induced and cue-elicited craving in cigarette smokers. *Journal of Consulting and Clinical Psychology* 68(2):233–40
- Lindsay EK, Creswell JD. 2016. Mechanisms of mindfulness training: Monitor and acceptance theory (MAT). *Clinical Psychology Review* 51:48–59
- Roys MR, Stewart SA, Copeland AL. 2024. Effects of a brief mindfulness intervention on smoking urges and negative affect following a negative affect induction. *Current Psychology* 43(3):2144–57



Copyright: © 2024 by the author(s). Published by Maximum Academic Press, Fayetteville, GA. This article is an open access article distributed under Creative Commons Attribution License (CC BY 4.0), visit <https://creativecommons.org/licenses/by/4.0/>.