The Different Effects of Mindfulness-Based Relapse Prevention Group Therapy on QEEG Measures in Various Severity Substance Use Disorder Involuntary Clients

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Abstract : Objective: The incidence of behavioral addictions, especially substance use disorders (SUDs), is gradually be taken seriously with various physical health problems. Mindfulness-based relapse prevention (MBRP) is a treatment option for promoting long-term health behavior change in recent years. MBRP is a structured protocol that integrates formal meditation practices with the cognitive-behavioral approach of relapse prevention treatment by teaching participants not to engage in reappraisal or savoring techniques. However, considering SUDs as a complex brain disease, questionnaires and symptom evaluation are not sufficient to evaluate the effect of MBRP. Neurophysiological biomarkers such as quantitative electroencephalogram (QEEG) may improve accurately represent the curative effects. This study attempted to find out the neurophysiological indicator of MBRP in various severity SUD involuntary clients. Participants and Methods: Thirteen participants (all males) completed 8-week mindfulness-based treatment provided by trained, licensed clinical psychologists. The behavioral data were from the Severity of Dependence Scale (SDS) and Negative Mood Regulation Scale (NMR) before and afterMBRP treatment. The QEEG data were simultaneously recorded with executive attention tasks, called comprehensive nonverbal attention test(CNAT). The two-way repeated-measures (treatment * severity) ANOVA and independent t-test were used for statistical analysis. Results: Thirteen participants regrouped into high substance dependence (HS) and low substance dependence (LS) by SDS cut-off. The HS group showed more SDS total score and lower gamma wave in the Go/No Go task of CNAT at pretest. Both groups showed the main effect that they had a lower frontal theta/beta ratio (TBR) during the simple reaction time task of CNAT. The main effect showed that the delay errors of CNAT were lower after MBRP. There was no other difference in CNAT between groups. However, after MBRP, compared to LS, the HS group have resonant progress in improving SDS and NMR scores. The neurophysiological index, the frontal TBR of the HS during the Go/No Go task of CNATdecreased than that of the LS group. Otherwise, the LS group's gamma wave was a significant reduction on the Go/No Go task of CNAT. Conclusion: The QEEG data supports the MBRP can restore the prefrontal function of involuntary addicts and lower their errors in executive attention tasks. However, the improvement of MBRPfor the addict with high addiction severity is significantly more than that with low severity, including QEEG's indicators and negative emotion regulation. Future directions include investigating the reasons for differences in efficacy among different severity of the addiction.

Keywords : mindfulness, involuntary clients, QEEG, emotion regulation
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