

## **A Meta-Analysis of the Association Between Greenspace and Mental Health After COVID-19**

**Authors :** Jae-Hyuk Hyun, Dong-Sung Bae, Jea-Sun Lee

**Abstract :** The COVID-19 pandemic emphasized the benefits of natural green space on mental health in pandemic situations. The effects of greenspace on reducing mental health disorder are detected, but limitations impede highlighting the overall effectiveness of greenspace on mental health to be valid and significant. Therefore, this study aims to comprehensively and quantitatively analyze the effectiveness and significance of greenspace in reducing mental disorders after the COVID-19 outbreak. This study adopted a systematic review to select adequate, necessary studies with significant associations between greenspace and mental health after COVID-19. Meta-analysis is performed using the selected studies for calculating and analyzing the combined effect size of greenspace on reducing mental disorder, difference of effect size in various factors of greenspace or mental health, and variables' effects on greenspace or mental health. Also, a correlation test using MQRS and effect size is performed to determine significant correlations of factors in greenspace and mental health. The analysis confirmed the combined effect size of the association between greenspace and mental health to be interpreted as large enough (medium effect size, 0.565). Various factors consisting of greenspace or mental health had considerable effect sizes, with heterogeneity existing between studies of different greenspace and mental health aspects (subgroups). A significant correlation between factors in greenspace and mental health was identified, with correlations satisfying both reliability and effectiveness used for suggesting necessary greenspace policies with mental health benefits during the pandemic situation. Different variables of the study period, female proportion, and mean age significantly affected certain factors of greenspace or mental health, while the increase in effects of greenspace on mental health was detected as the COVID-19 period continued. Also, the regional heterogeneity of effects on the association between greenspace and mental health is recognized in all factors consisting of greenspace and mental health except for the visitation of greenspace. In conclusion, valid and significant effects were detected in various associations between greenspace and mental health. Based on the results of this study, conducting elaborate research and establishing adequate and necessary greenspace policies and strategies are recommended to effectively benefit the mental health of citizens in future pandemic situations.

**Keywords :** greenspace, natural environment, mental health, mental disorder, COVID-19, pandemic, systematic review, meta-analysis

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