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Does Psychiatric Disorders Cause Reduction in Pulmonary Function and Respiratory Muscle Strength?: Case Series

Tansu Birinci¹, Rustem Mustafaoglu², Ebru Kaya Mutlu², Caner Mutlu³, Arzu Razak Özdiñçler⁴

¹Department of Physiotherapy and Rehabilitation, İstanbul Medeniyet University School of Medicine, İstanbul, Turkey

²Department of Physiotherapy and Rehabilitation, İstanbul University-Cerrahpaşa, Cerrahpaşa School of Medicine, İstanbul, Turkey

³Clinic of Child and Adolescent Psychiatry, Bakırköy Prof. Dr. Mazhar Osman Training and Research Hospital, İstanbul, Turkey

⁴Department of Physiotherapy and Rehabilitation, Biruni University School of Medicine, İstanbul, Turkey

Objectives: There are data from clinical samples showing that many psychiatric disorders are associated with an increase in the incidence of respiratory diseases. Clinical researches reported that the incidence of asthma has increased among individuals with psychiatric problems such as panic attacks, generalized anxiety, post-traumatic stress disorder, and depression. There is a limited number of studies examining the relationship between the pulmonary function test and different types of psychiatric disorders. In addition, the relationship between impaired pulmonary function and psychiatric disorders has not been fully explained. The aim of this study was to evaluate the pulmonary function and respiratory muscle strength of adolescents who receive inpatient treatment in the psychiatric ward.

Methods: Twelve voluntary adolescents who receive inpatient treatment in Prof.Dr. Mazhar Osman Mental Health and Neurological Diseases Hospital, Child and Adolescent Psychiatry Department were included (6 female; mean age: 15.91±1.50 years; BMI: 27.03±5.54 kg/m²). Participants were diagnosed bipolar disorder (n=1), dissociation disorder (n=1), conduct disorder (n=2), obsessive-compulsive disorder (n=1) and major depression (n=7). Pulmonary functions were measured by a spirometer following the ATS and ERS guidelines using the Spirobank II (Medical International Research srl Rome, Italy). Respiratory muscle strength was assessed by maximum inspiratory pressure (MIP) and maximum expiratory pressure (MEP) which were measured with the subject seated, wearing a nose clip and with a plastic mouthpiece by a Micro Medical MicroRPM® (Carefusion Micromedical, Micro RPM, USA). Measurements were repeated three times and best results were recorded. Measurements were compared with the predicted values which are based on height, weight, age, gender, and ethnicity.

Results: The mean difference between measured and predicted values of FVC, FEV₁, PEF, and FEF_{25-75%} were -0.19±0.75 (L), -0.11±0.74 (L), -2.37±1.67 (L/s) and -0.70±1.12 (L/s), respectively. The measured value of MIP and MEP were lower than predicted values and the mean difference was -29.33±27.05 cmH₂O for MIP and -44.33±27.06 cmH₂O for MEP.

Conclusion: According to the results of this preliminary study with a small sample with different psychiatric disorders, it was found that there was a minimal decrease in pulmonary function test parameters compared to the predicted values. In addition, it was observed that the patients had decreased inspiratory and expiratory muscle strength compared to the predicted values. Further studies are needed to support these results obtained from a small number of cases and to determine the cause-effect relationship between pulmonary function test and psychiatric disorders.

Keywords: Mental health, respiratory muscle strength, psychiatric disorders, pulmonary function