**The relationship between body composition and the severity of COPD in Iranian patients with COPD.**

**Running title: Body composition of patients with COPD.**

**Abstract**

**Background:**Chronic obstructive pulmonary disease (COPD) is a complex respiratory disorder characterized by progressive airflow limitation and systemic manifestations. Numerous studies have demonstrated the impact of body composition, such as muscle mass and adiposity, on the prognosis of various chronic diseases, including COPD. Understanding the correlation between body composition and COPD severity can potentially provide valuable insights into disease progression, clinical management, and potential therapeutic interventions for this debilitating condition. Therefore, further research to elucidate this relationship in Iranian COPD patients is crucial to improve patient outcomes and enhance personalized care strategies.

**Material and method**

**Study Population**

This cross-sectional study was conducted at Dr. Masih Daneshvari Hospital in Tehran, Iran with Iranian COPD patients aged 18-75. The diagnosis of COPD was based on the GOLD guideline and evaluation of FEV1. Spirometry measured FEV1, FVC, and FEV1/FVC ratio. COPD severity was categorized into mild, moderate, severe, and very severe. Exclusion criteria included recent COPD exacerbation, liver and kidney diseases, cachexia, and cardiac comorbidities. Demographic, medical history, and quality of life information were gathered through interviews and examinations, using a structured questionnaire. Written informed consent forms were obtained from all patients, and the study received approval from the Ethics Committee.

**Assessment of BMI, TSF, and MUAC**

The Body Mass Index (BMI) was calculated using the weight/height squared method and categorized into three groups: underweight (BMI<18.5), normal (18.5<BMI<24.9), or overweight (BMI≥25). Triceps Skinfolds (TSF), were measured using an Adipometer skinfold caliper, and Mid-Upper Arm Circumference (MUAC) was measured using a plastic measuring tape. These measurements were used to monitor body composition.

The severity of dyspnea was classified using the mMRC shortness of breath scale. Statistical analyses were performed using SPSS 22 for Windows. The chi-square and Spearman correlation tests were used to assess the relationship between categorical and continuous variables. The Mann-Whitney and Kruskal-Wallis nonparametric tests were used to compare means between groups. A p-value of less than 0.05 was considered statistically significant.

**Result**

This study involved 184 patients with chronic obstructive pulmonary disease (COPD). The majority of participants (88.6%) were men, with an average age of 60.6 years. The youngest patient was 34 years old, while the oldest was 91 years old, with a median age of 61 years. The average body mass index (BMI) was 25.4, with a standard deviation of 5.1. Among the participants, 9.8% were underweight, 34.8% had a normal weight, and 52.7% were overweight. In terms of lung function, 12% had very severe FEV1, 29.9% had severe FEV1, 39.1% had moderate FEV1, and 19% had mild FEV1. The levels of shortness of breath based on the mMRC questionnaire were 8.2% at level 1, 59.2% at level 2, 25.5% at level 3, and 7.1% at level 4.The study found that individuals experience an average of 0.7 ± 0.7 severe attacks. 30% had one severe attack, 54.3% had two, and 10.3% had three. There were significant relationships between body mass index, thigh circumference, weight, TSF, and MUAC with FEV1 and mMRC.

**Conclusion**

Our findings demonstrate the association between the degree of COPD severity and the body composition of individuals with COPD. We propose that regularly assessing anthropometric factors could be a valuable approach to the management of COPD.

**Keywords:** COPD Severity, mMRC, BMI, TSF, MUAC, Body composition