

# Impact of Non-Alcoholic Fatty Liver Disease on Respiratory System

Teresa Auguet\*

Department of Medicine and Surgery, Rovira i Virgili University, Tarragona, Spain

## Opinion Article

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**\*For Correspondence:**

Teresa Auguet, Department of Medicine and Surgery, Rovira i Virgili University, Tarragona, Spain

**E-mail:**

tauguet.hj23.ics@gencat.cat

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## DESCRIPTION

Currently, the worldwide epidemic is obesity, and the prevalence of various obesity-related diseases are steadily and progressively increasing. Obesity is the most important phenotypic risk factor for both Obstructive Sleep Apnea (OSA) and Non Alcoholic Fatty Liver Disease (NAFLD). Obstructive Sleep Apnea (OSA) is a clinical condition usually considered as a respiratory disease, which was recognized as a multi-systemic disease in the last two decades. It consists of recurrent nocturnal episodes of complete (Apnea) and incomplete (hypopnea) obstruction of the upper airway, leading to hypoxemia and reoxygenation phenomena. It affects 1%-4% of the population, mostly males, with obesity and/or metabolic syndrome, usually one of the most important symptoms of obesity is increased fat deposition in the upper airways and surrounding soft tissues, next is obstructive sleep apnea, non-alcoholic fatty liver. Non Alcoholic fatty liver disease was independently associated with reduced pulmonary function, and the severity of non-alcoholic fatty liver disease was inversely correlated with pulmonary function. Along with this, Non Alcoholic Fatty Liver Disease (NAFLD) is associated with an increased risk of cardiovascular disease and insulin resistance. Pulmonary function is also known to be related with cardiovascular disease and metabolic syndrome.

Although, from a clinical perspective, Obstructive Sleep Apnea (OSA) patients generally consults physicians due to sleep fragmentation, daytime sleepiness, and another important consequence is the chronic intermittent ischemia that occurs in different organs, such as liver.

Obstructive Sleep Apnea (OSA), results in recurrent episodes of upper airway obstruction during sleep, which can lead to plethora of metabolic disturbances.

Intermittent Hypoxia (IH) or intermittent hypoxia-reoxygenation and sleep fragmentation, results an important triggering mechanism for potential systemic organ or tissue impact in Obstructive Sleep Apnea (OSA), including Non Alcoholic Fatty Liver Disease (NAFLD). In fact, it seems that, intermittent hypoxia determines the severity of Non Alcoholic Fatty Liver Disease (NAFLD). Finally, world-wide researchers have proposed that nocturnal hypoxemia may alter the integrity of the intestinal barrier and leading to major consequence attributed to dysbiosis and bacterial translocation in the pathogenesis of Non Alcoholic Fatty Liver Disease (NAFLD).

Moreover, recently, a relation between fatty liver and lung function impairment has been identified, and both are independently associated with metabolic dysfunction. In a study including 6149 individuals, it has shown that persistent or worsened status of fatty liver was significantly associated with accelerated declines in Forced Vital Capacity (FVC), also worsening condition related to fatty liver and was significantly associated with gradual decrease in Forced Expiratory Volume (FEV).

On the other hand, patients with Non-alcoholic Fatty Liver Disease (NAFLD), with severe Corona Virus disease 2019 (COVID-19) including other comorbidities, metabolic syndrome or cardiovascular diseases, pulmonary infections the final side effect would be obesity if the patient is not treated with prescribed medication.

Our main objective to prove that there is an unknown association between Non-alcoholic fatty liver disease and pulmonary function. Focusing specifically on COVID-19, some studies have shown that Non-Alcoholic Fatty Liver Disease (NAFLD) is associated with severe Corona Virus Disease 2019 (COVID-19) and poor outcome; nevertheless, other studies showed no significant difference between groups in comparing complications and clinical outcomes.