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# **Overuse of Short Acting Beta-2 Agonist (SABA) in asthmatics: relationship with lung function and airway inflammation**

Asthma, Treatments, Bronchodilators

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**Background :** Excessive use of SABA in asthmatics can lead to adverse health outcomes such as exacerbations and even death. The reasons for which patients are overusing SABA has not been investigated in depth. Here we have investigated how self-reported overuse of SABA may relate to demographic, lung function and airway inflammatory parameters.

**Methods :** We conducted a cross sectional study on 2811 adolescent and adult asthmatics recruited from the Liege CHU asthma clinic over a period spanning from 2011-2023. Overuse was defined by a score  $\geq 3$  to the item 6 of the ACQ. This group of patients was compared to the groups who either did not use (score 0) or reported moderate use of SABA (score 1-2).

**Results :** Overall, 277 patients were overusers (10%), 908 patients were moderate users (32%) and 1625 were non users of SABA (58%). Overusers of SABA had greater smoking habit, greater BMI, lower pre bronchodilation % predicted forced expiratory volume in 1 second (FEV1) as compared to the two other groups ( $p < 0.0001$  and  $p < 0.0001$ ) as well as greater % predicted FEV1 reversibility to 400  $\mu\text{g}$  ( $p < 0.0001$  compared to non-users and  $p < 0.05$  compared to moderate users). Furthermore, overuse of SABA was associated with greater sputum eosinophil ( $p < 0.0001$  for both comparison) but not neutrophil counts nor with greater FeNO levels.

**Conclusion :** Overuse of SABA in asthmatics is associated with lower airway calibre, greater reversibility to salbutamol and greater airway eosinophilic inflammation. This study shows that there is a physiological and pathological ground underlying SABA overuse.